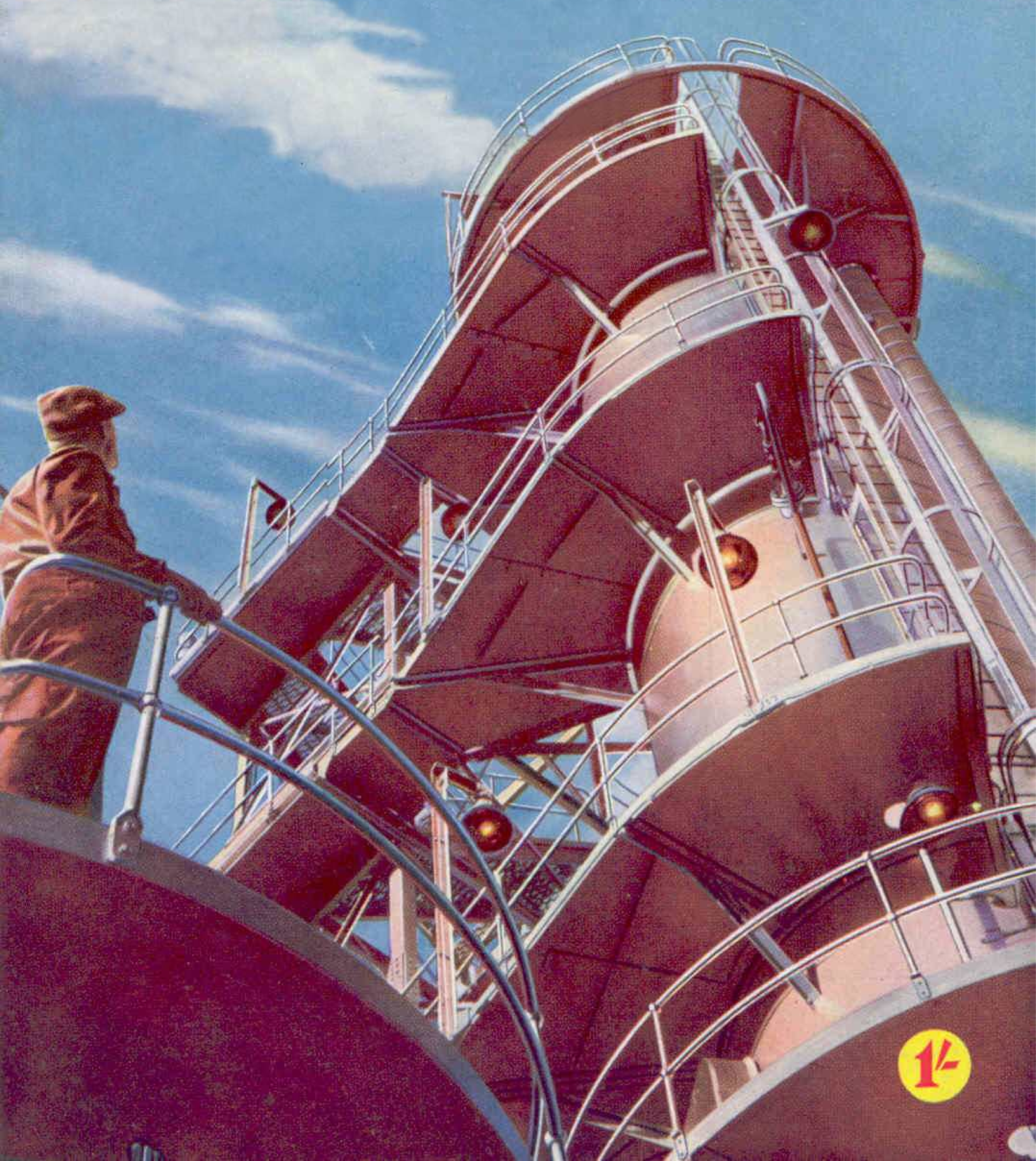
VOL. XXXIX No. 6 JUNE 1954

MECCANO MAGAZINE



1/-

DINKY TOYS

TRADE MARK REGD.

NEW

MODELS READY DURING JUNE

●

See them at your local dealers

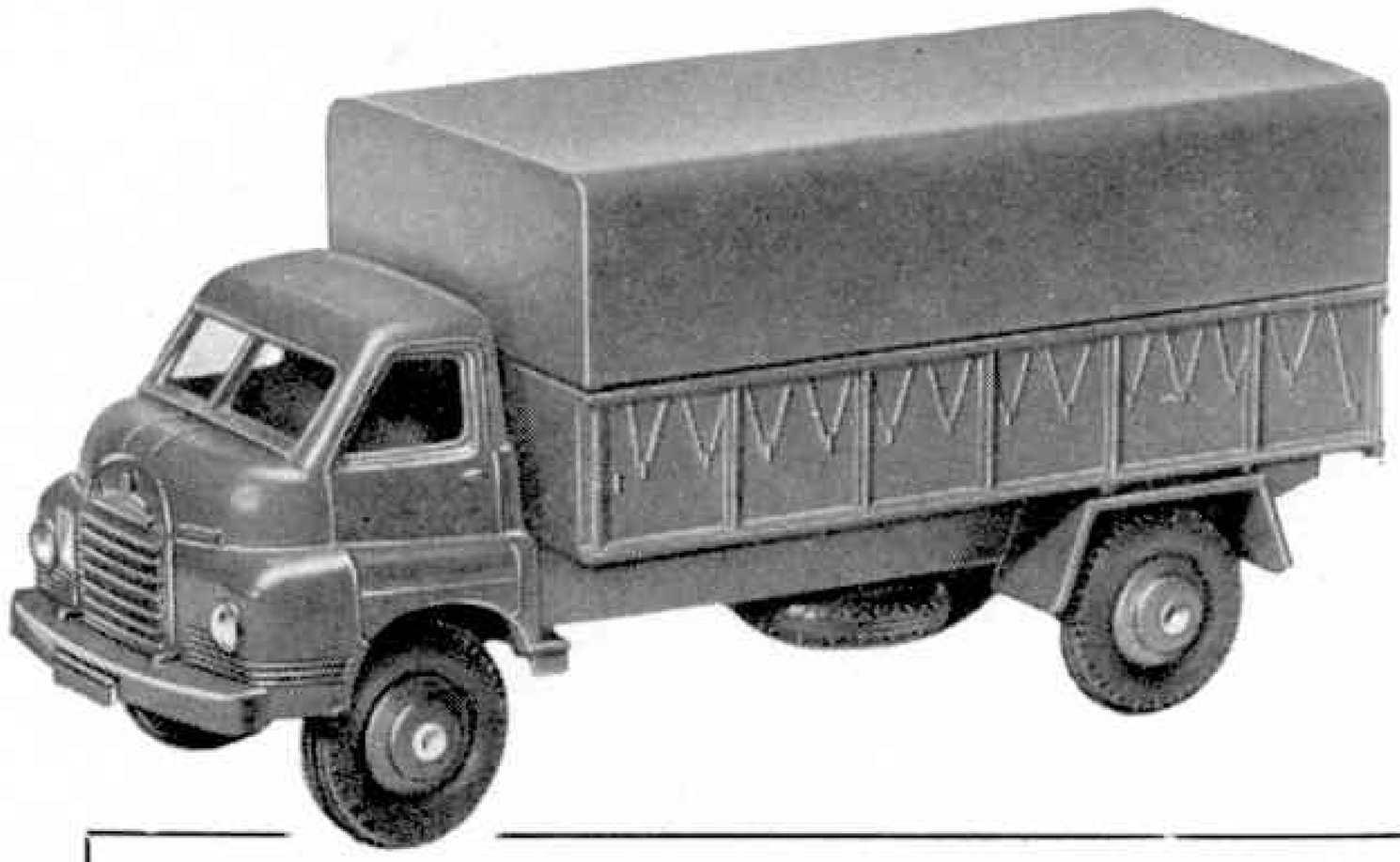
●

Prices include Purchase Tax

BEDFORD 10-cwt. VAN "KODAK" No. 480

The bold modern styling of the popular Bedford 10-cwt. Van is seen to advantage in this fine new model, which is one of the most attractive commercial vehicles in the Dinky Toys range. It measures 3¼ in. length, and is enamelled in bright yellow. Kodak transfers on the side panels add to the realism.

PRICE **2/9**



3-ton ARMY WAGON No. 621

Another fine transport wagon for the playroom army—the 3-ton Army Wagon on Big Bedford chassis with removable cover, underslung spare wheel and towing hook. The length of this miniature is 4⅜ in., and it is enamelled in service green with the Royal Armoured Corps sign on front and rear.

PRICE **4/9**

MADE IN ENGLAND BY MECCANO LIMITED

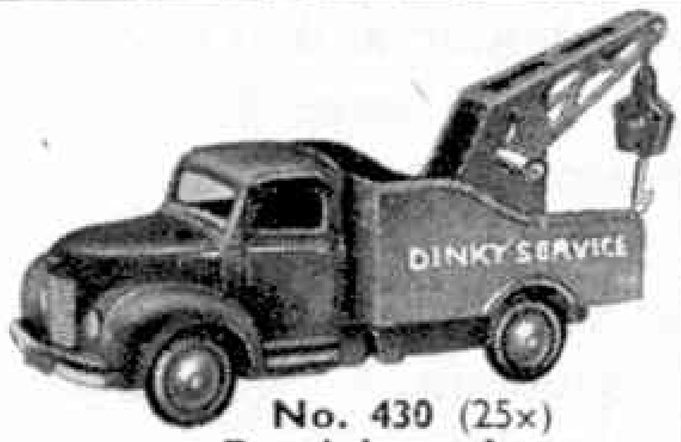
DINKY TOYS

TRADE MARK REGD.

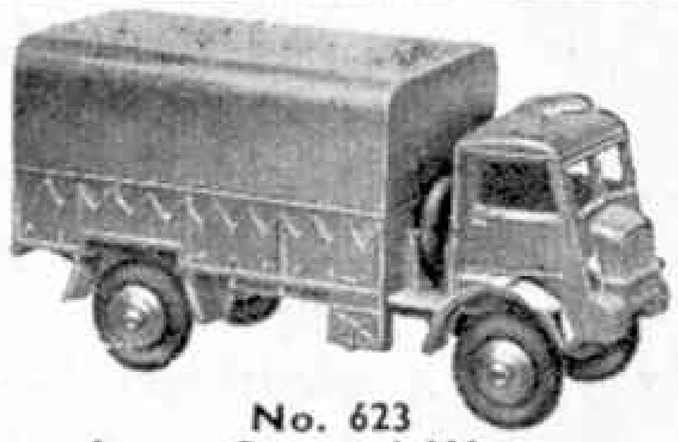
No. 470
Austin Van "Shell/B.P."
Length 3½ in. **2/11**

No. 622
10-Ton Army Truck
Length 5⅛ in. **6/9**

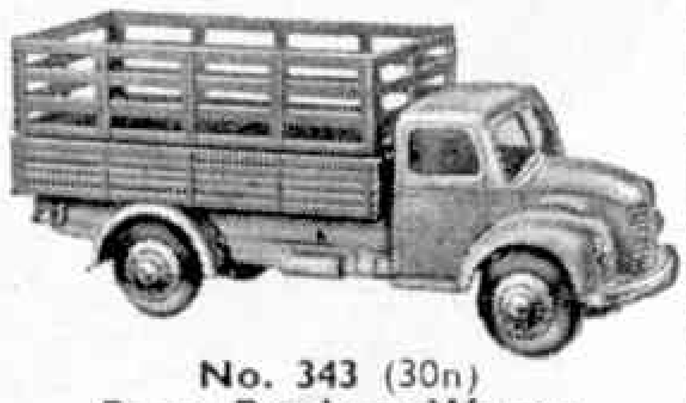
No. 253 (30h)
Daimler Ambulance
Length 3¾ in. **2/11**



No. 430 (25x)
Breakdown Lorry
Length 4¾ in. **5/6**

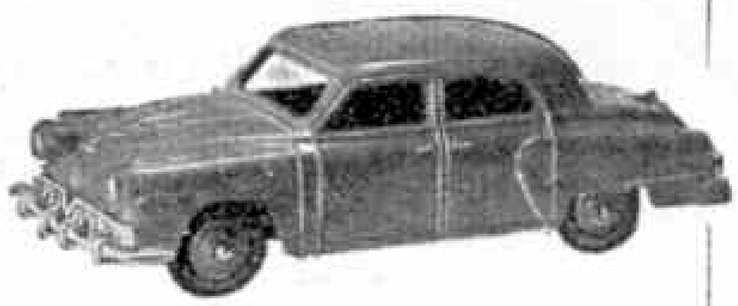


No. 623
Army Covered Wagon
Length 3⅞ in. **3/7**

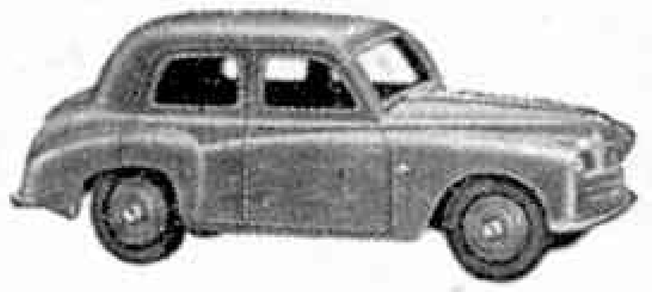


No. 343 (30n)
Farm Produce Wagon
Length 4¼ in. **3/6**

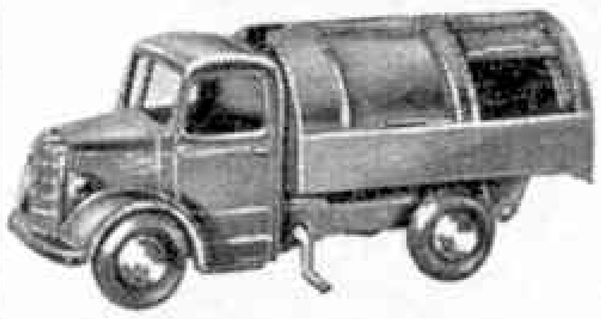
No. 161 (40j)
Austin Somerset Saloon
Length 3½ in. **2/2**



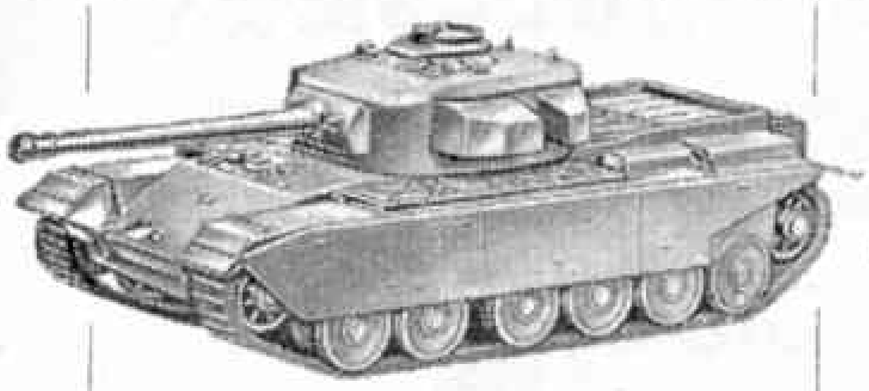
No. 172
Studebaker Landcruiser
Length 4¼ in. **2/8**



No. 154 (40f)
Hillman Minx
Length 3½ in. **2/2**



No. 252 (25v)
Refuse Wagon
Length 4¼ in. **5/10**



No. 651
Centurion Tank
Length 5 in. **7/11**

No. 159 (40g)
Morris Oxford Saloon
Length 3⅝ in. **2/2**

Express Passenger Train No. 798

Finished in BR colours, this set with articulated coaches measures 11¾ inches in length, and the coaches are detachable.

PRICE **7/10**

All Prices include Purchase Tax

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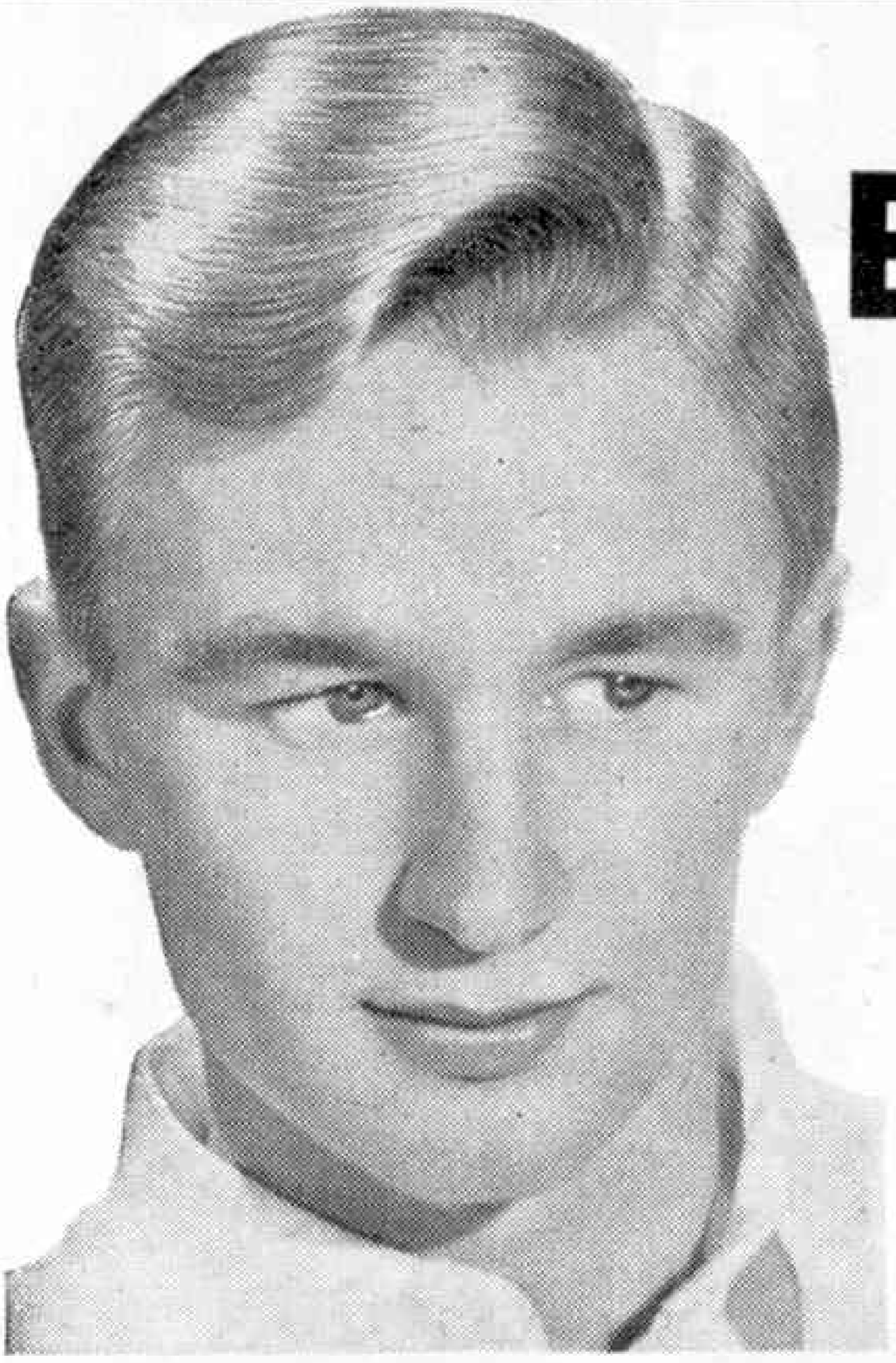

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Accessory Kit 3a, which converts Kit 3 into Kit 4.....25/6

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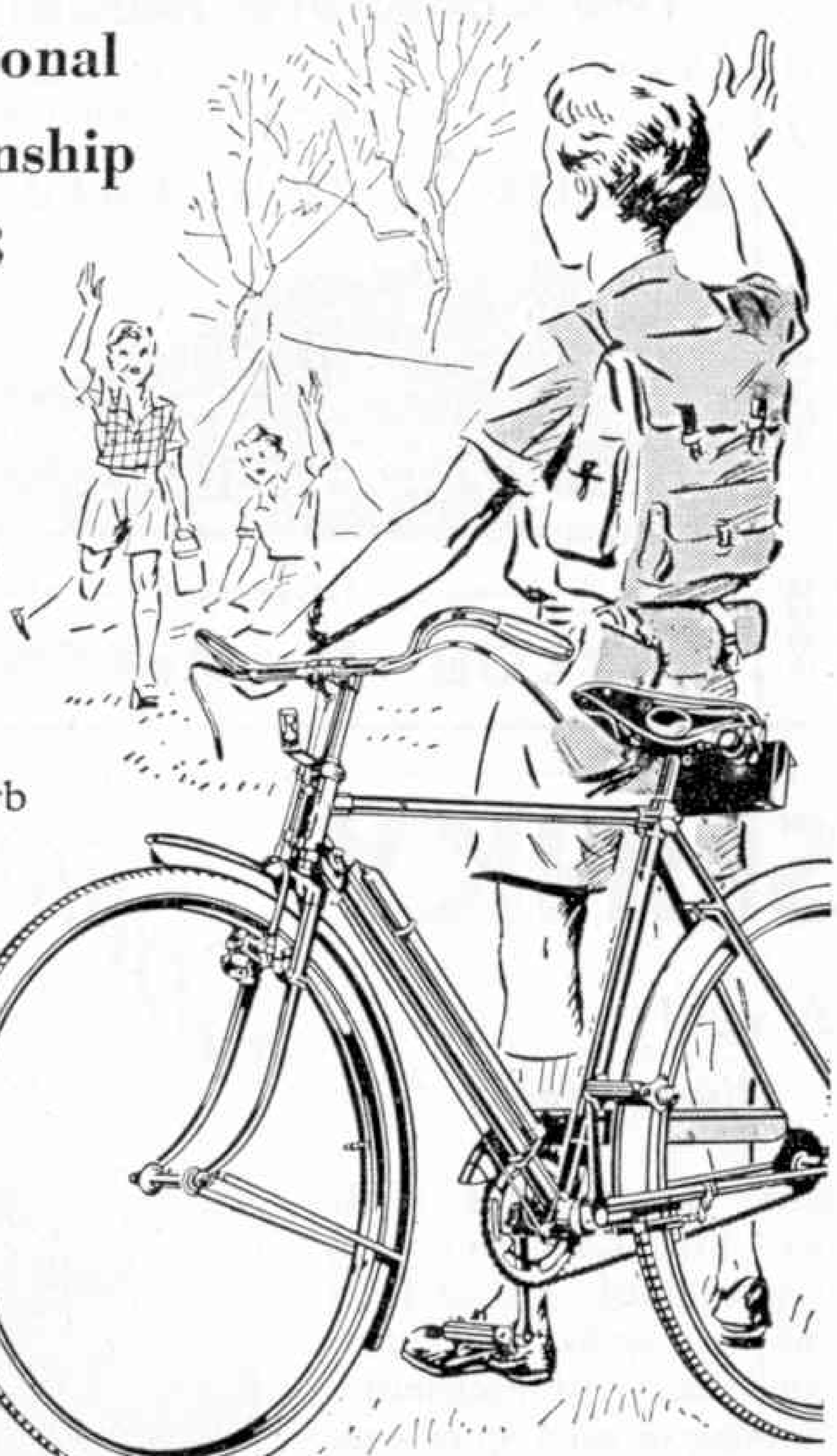

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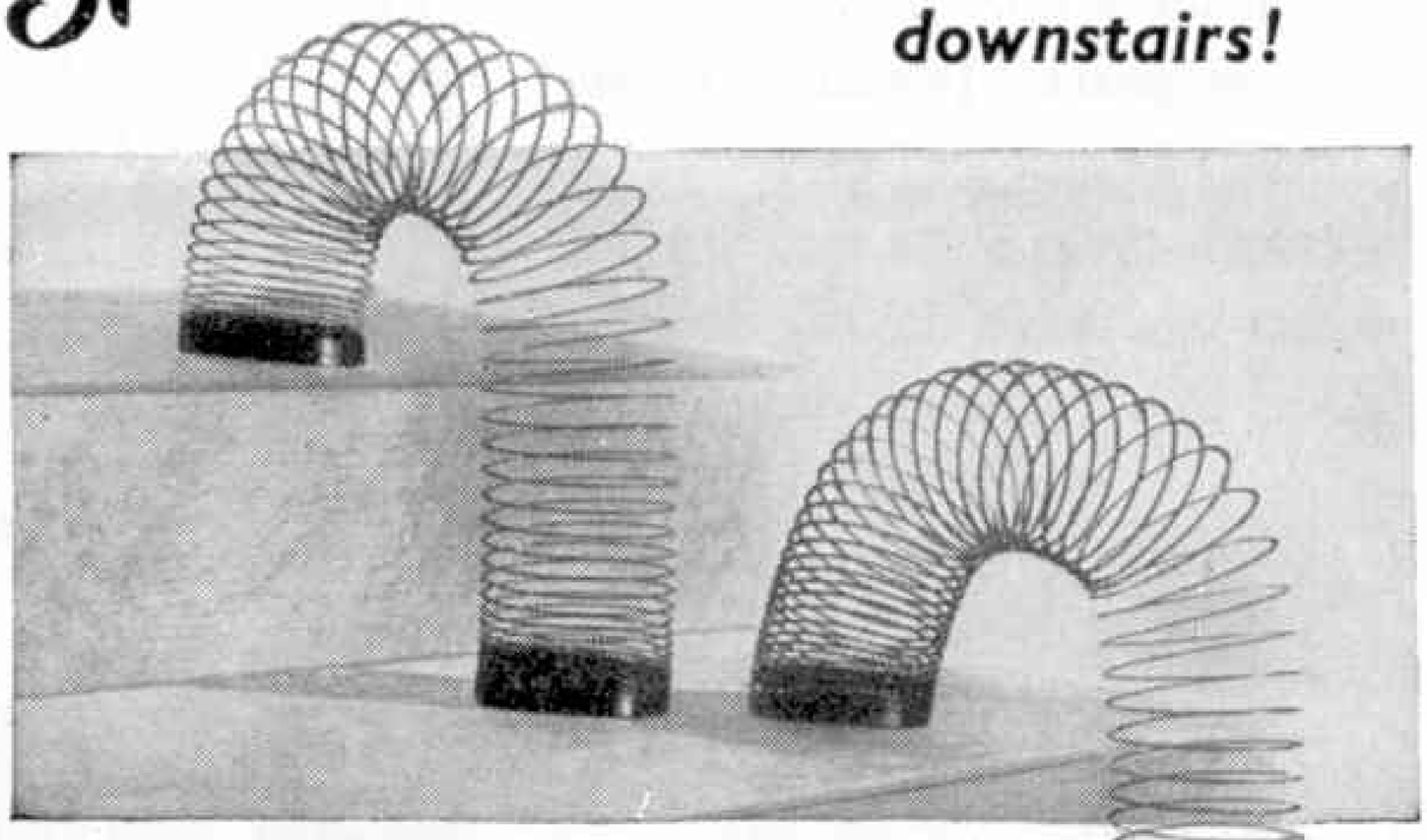
It walks downstairs!



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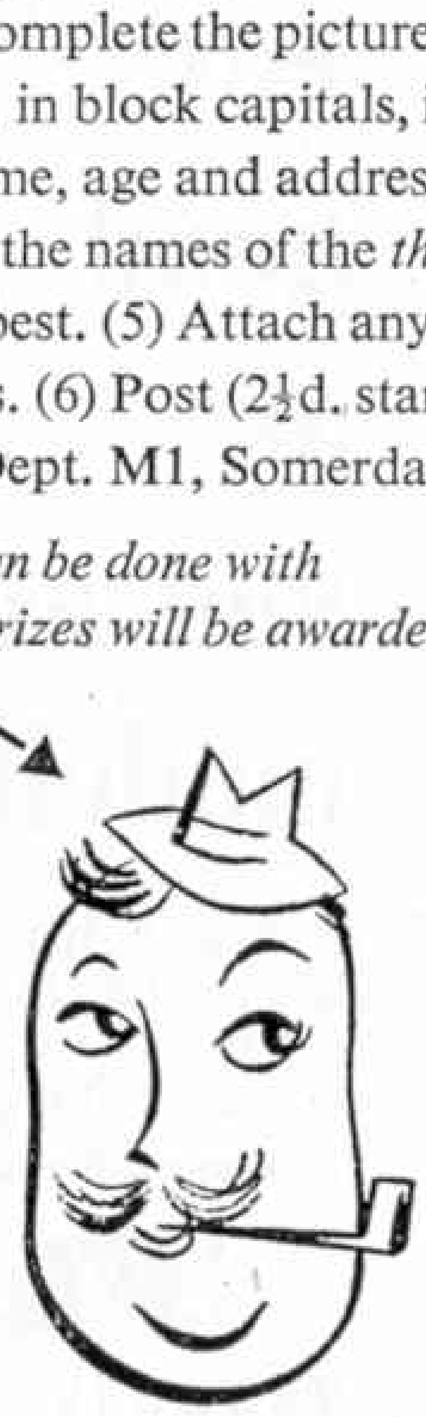
FREE novelty game for every entrant!

(SIZE 11 X 14)

(1) With a pencil or crayon, copy the shape on to a sheet of paper about 10″ × 8″. (2) Now complete the picture by turning the shape into a face. (3) Write, in block capitals, in the top right hand corner, your full name, age and address. (4) Write, in the bottom left hand corner, the names of the *three* Fry's Chocolate Bars you like best. (5) Attach any two wrappers from Fry's Chocolate Bars. (6) Post (2½d. stamp on envelope) to Fry's Competition Dept. M1, Somerdale, Bristol.

This example shows just what can be done with the shape—but do not copy it! Prizes will be awarded for skill and originality.



Copy this shape on to a sheet of paper, about 10″ x 8″

The competition is open to children from 5—15 (inclusive). Prizes will be awarded in each age group.

Send as many entries as you like —but each must be accompanied by two Fry's Chocolate Bar wrappers.

Entries restricted to residents in Gt. Britain and Northern Ireland.

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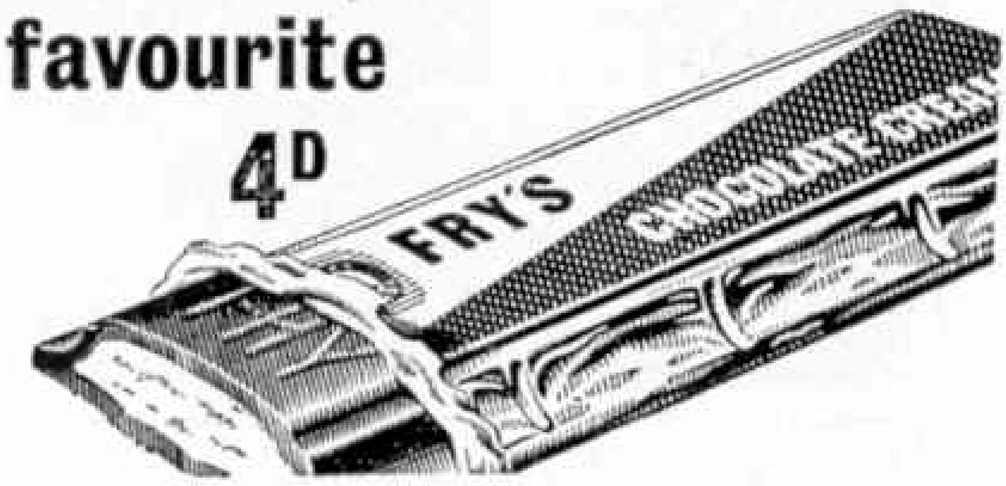

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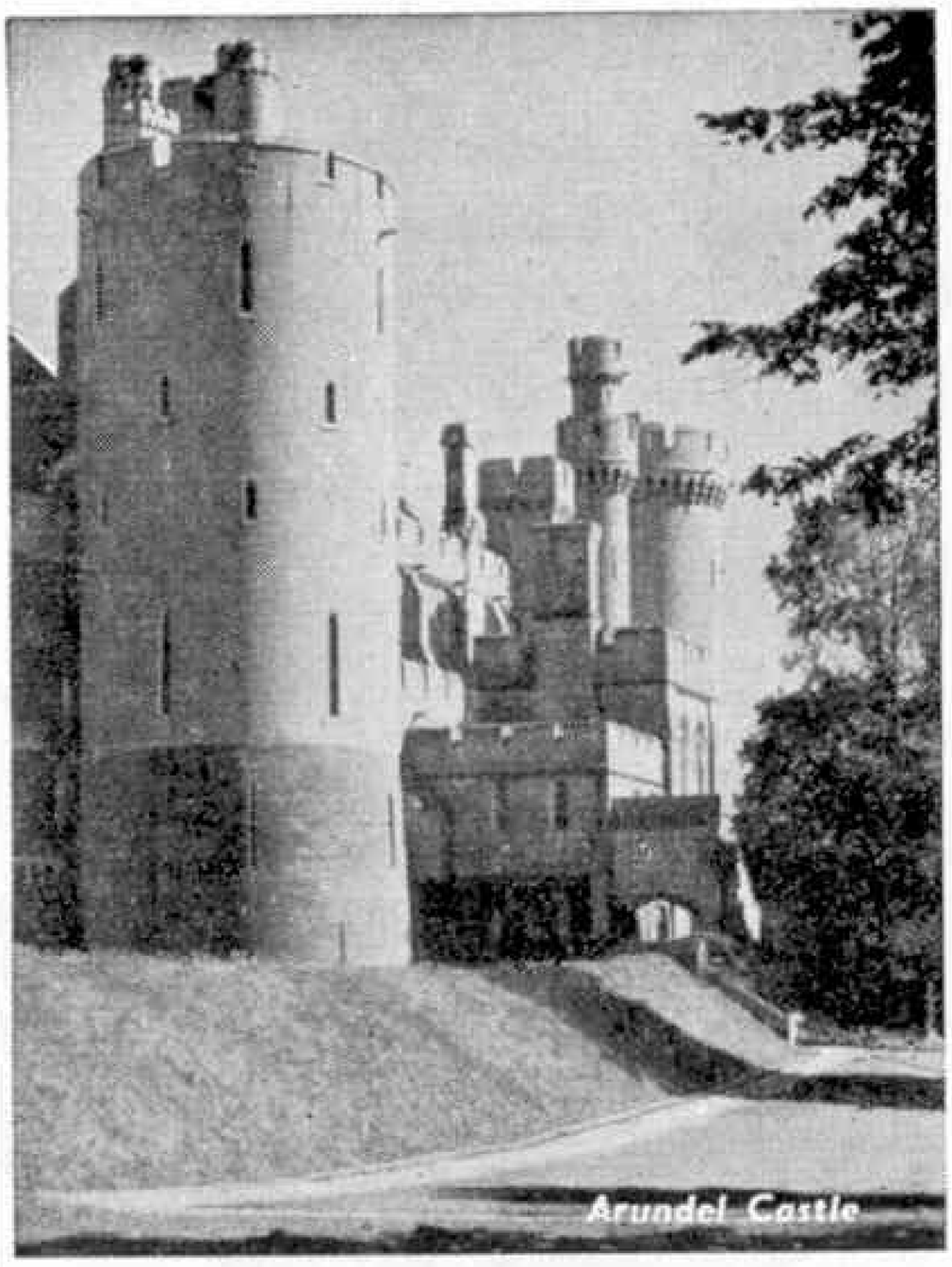

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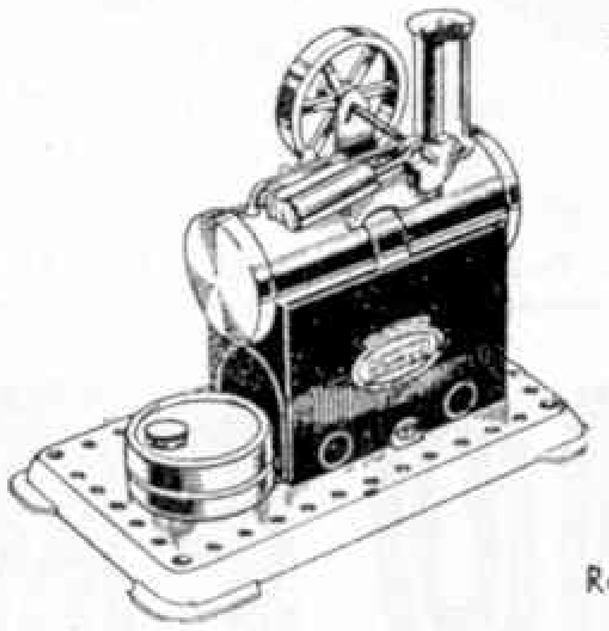

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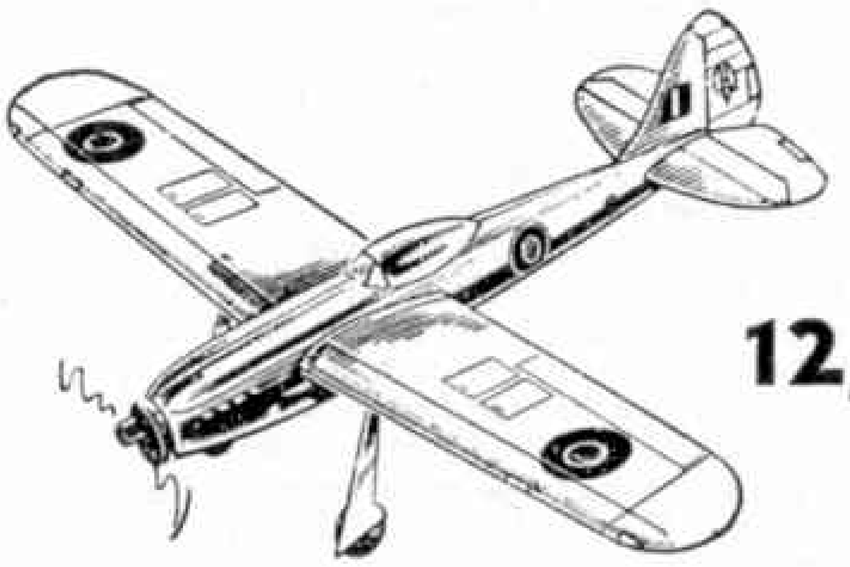

12/6

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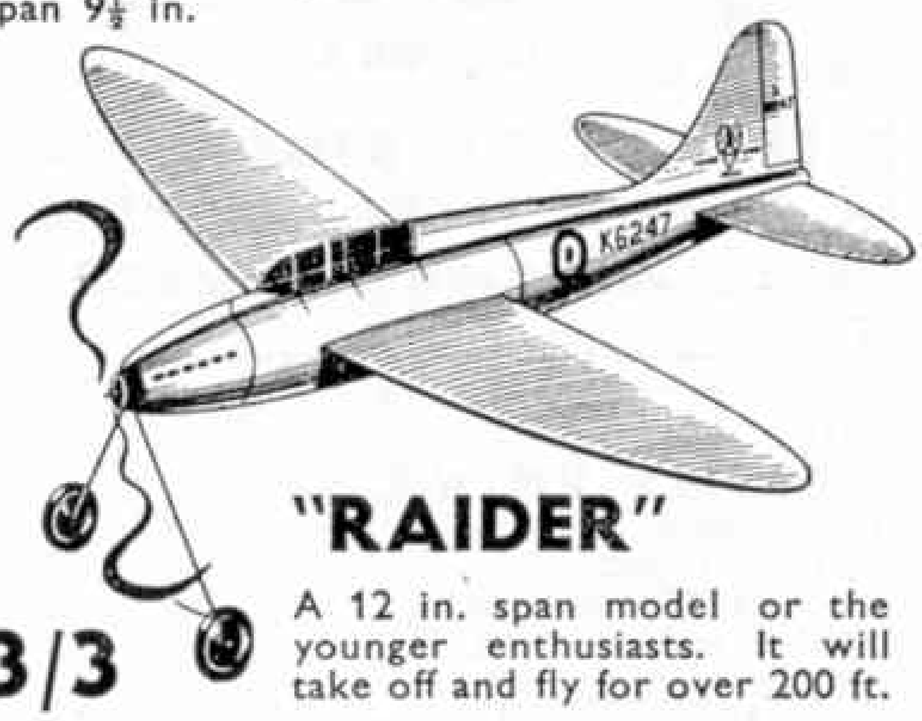

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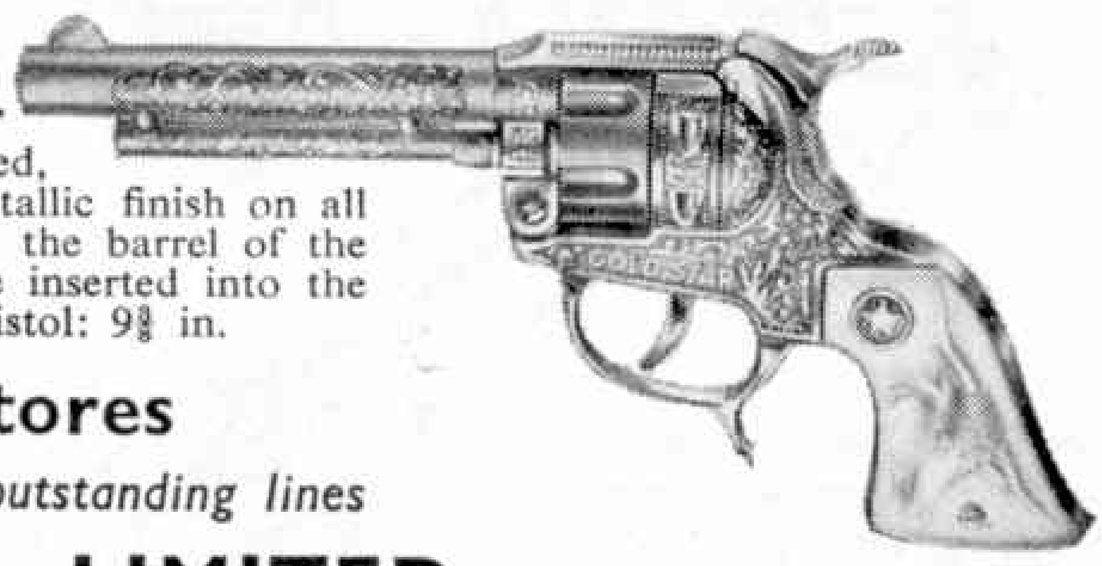

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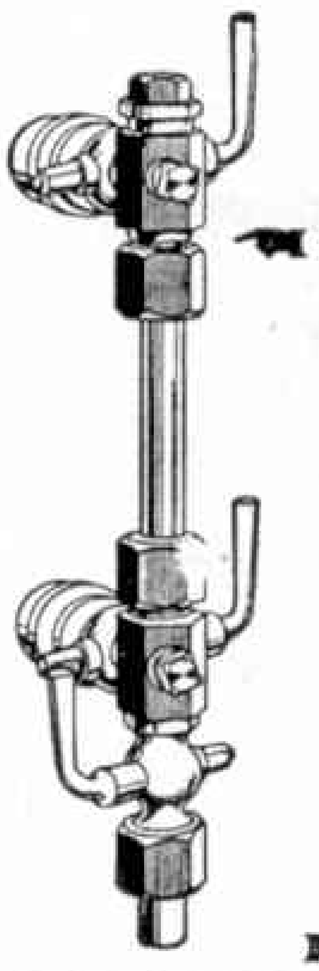

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with union drain cock
3/16 dia. Glass, **16/11**

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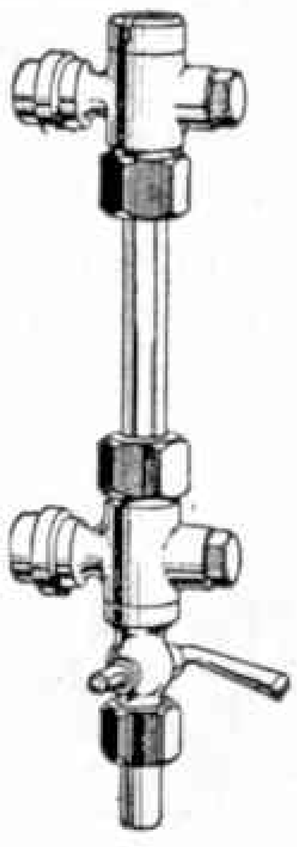

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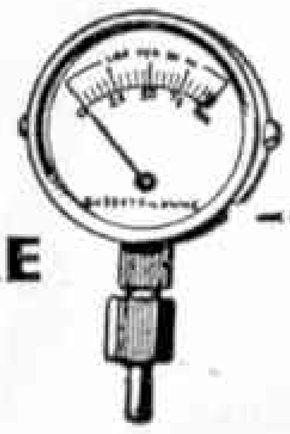
with drain cock
3/16 dia. Glass, **12/3**

PLAIN PATTERN
without drain cock
3/16 dia. Glass, **9/4**
7/32 dia. Glass, **8/9**



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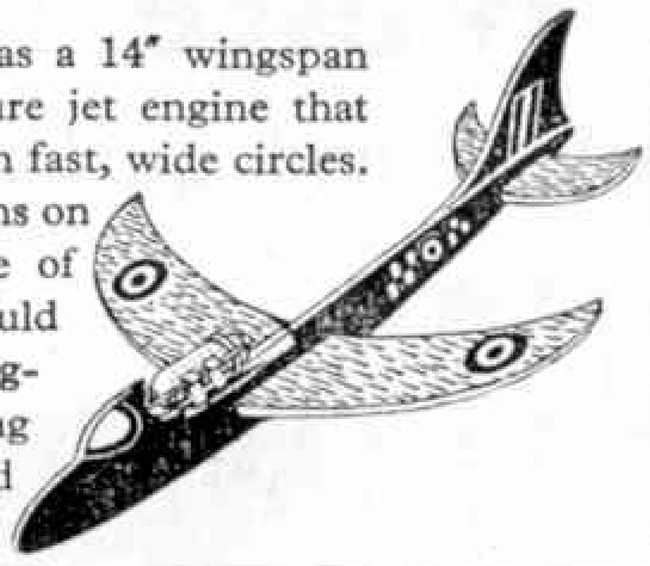

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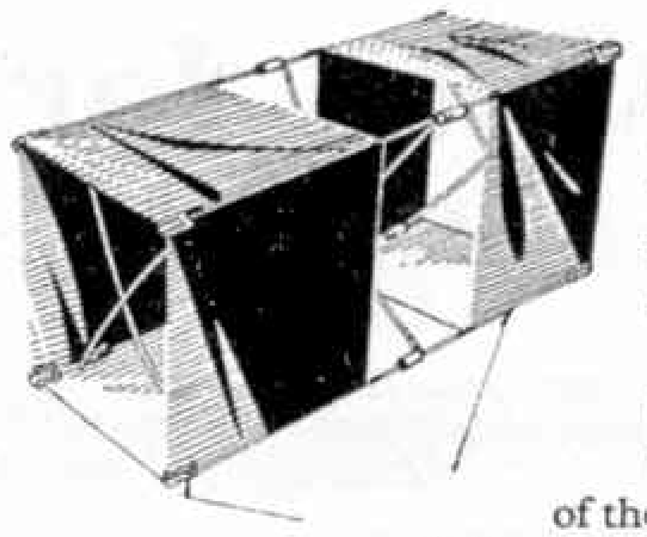

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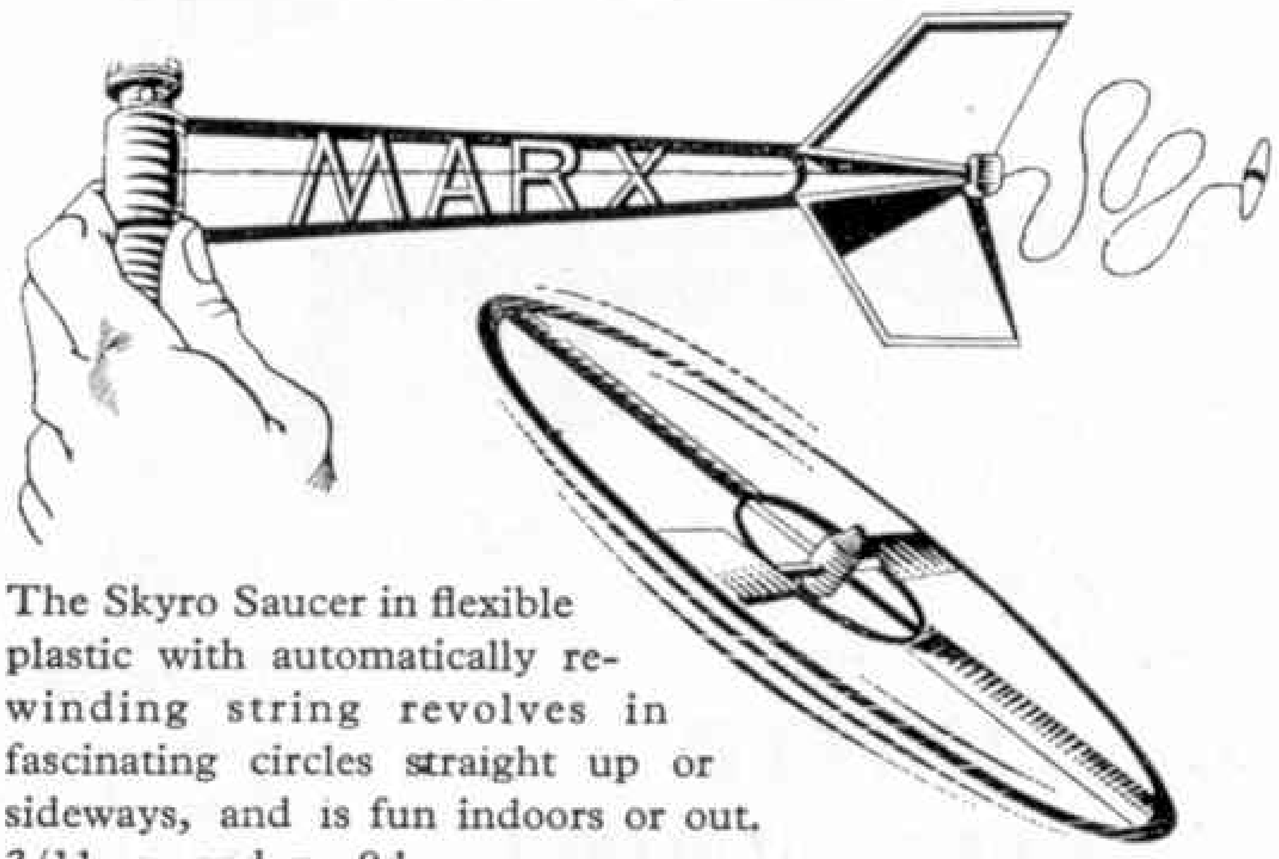

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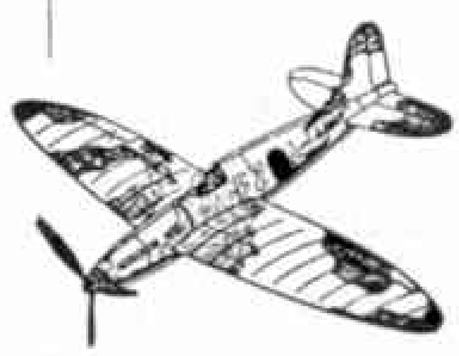

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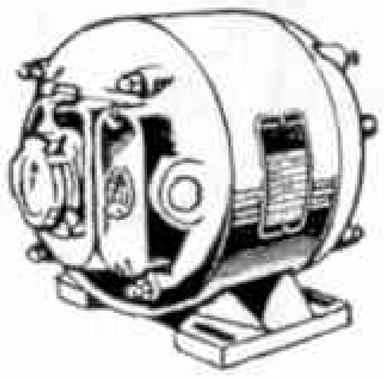

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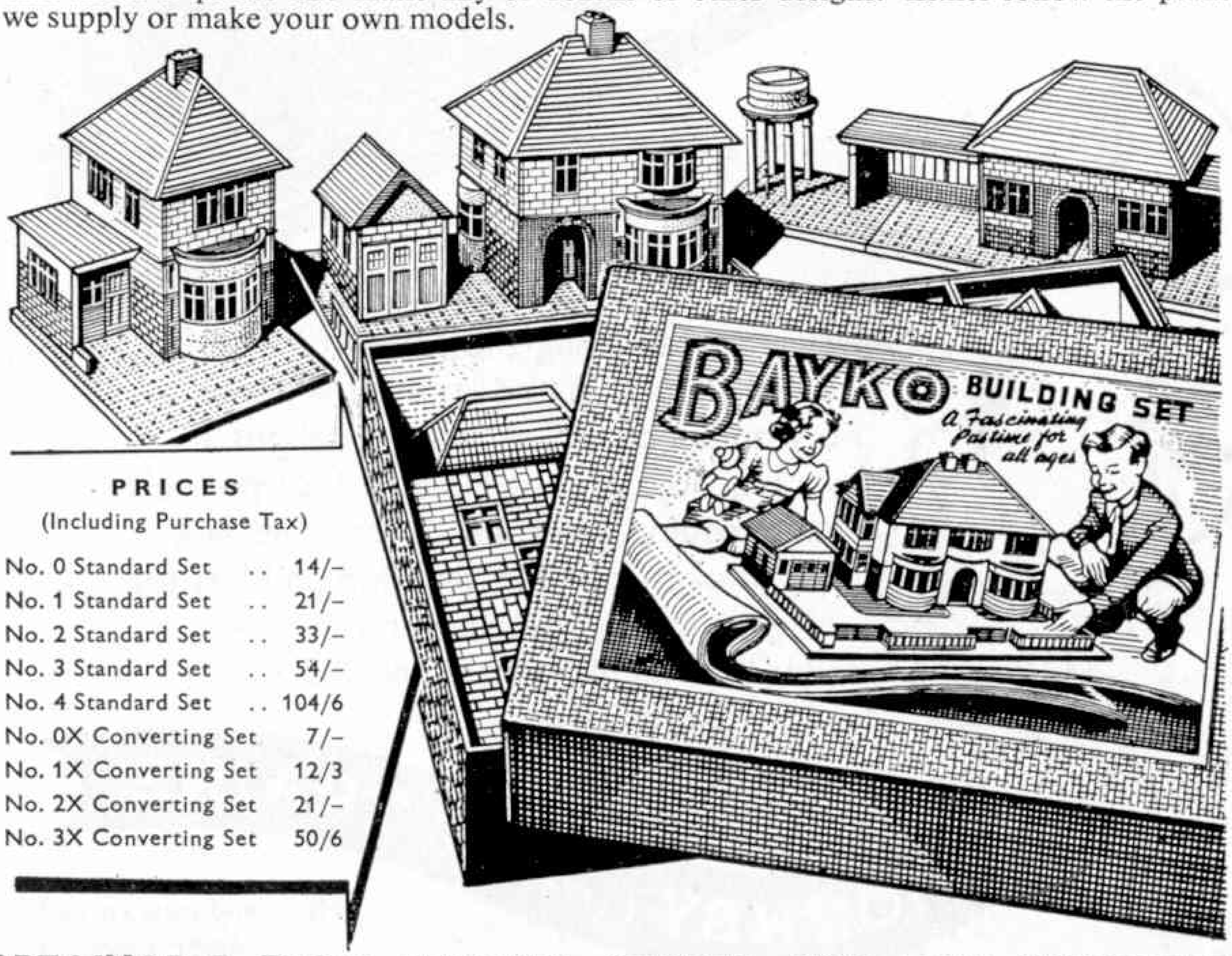

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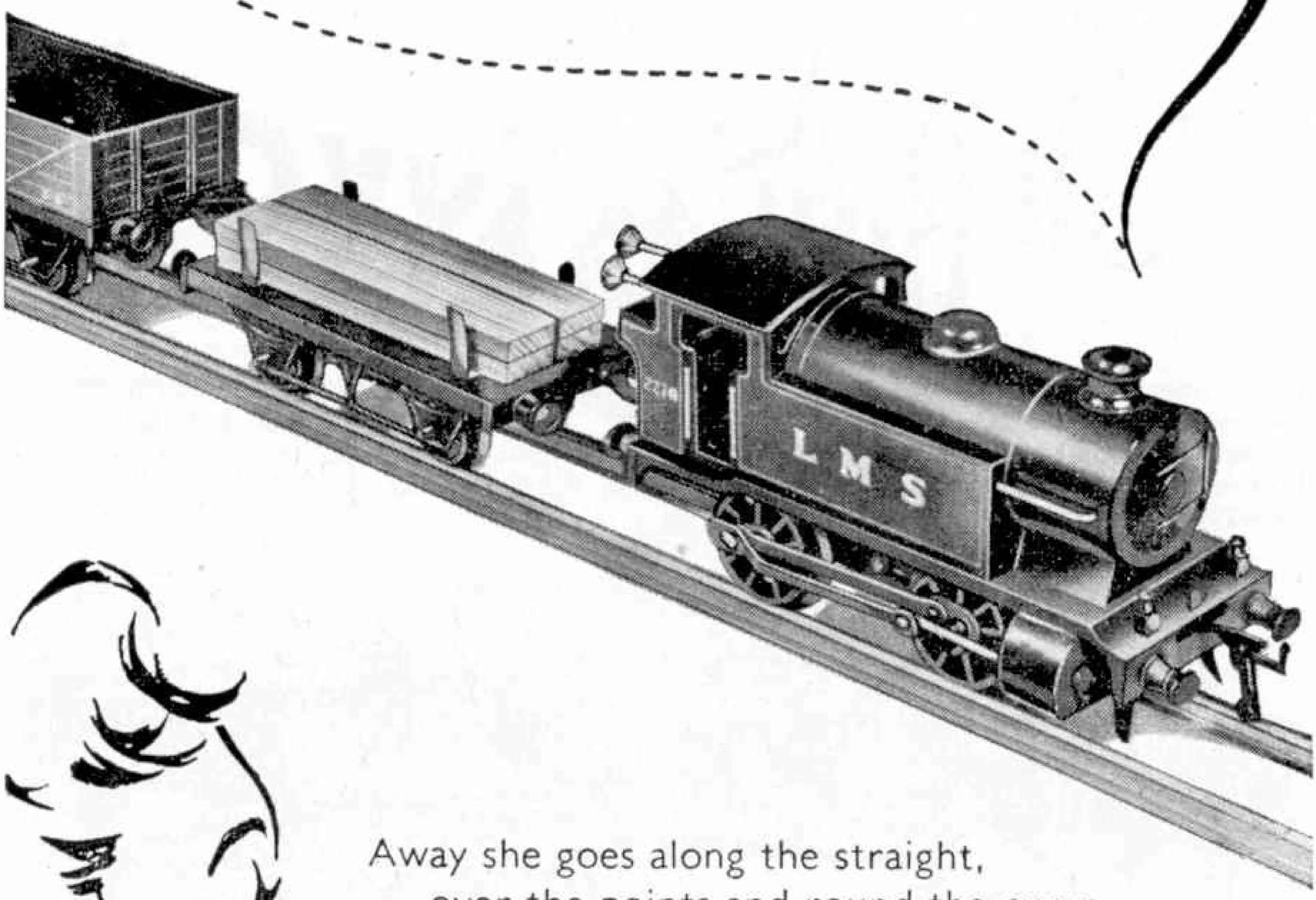

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Vol. XXXIX
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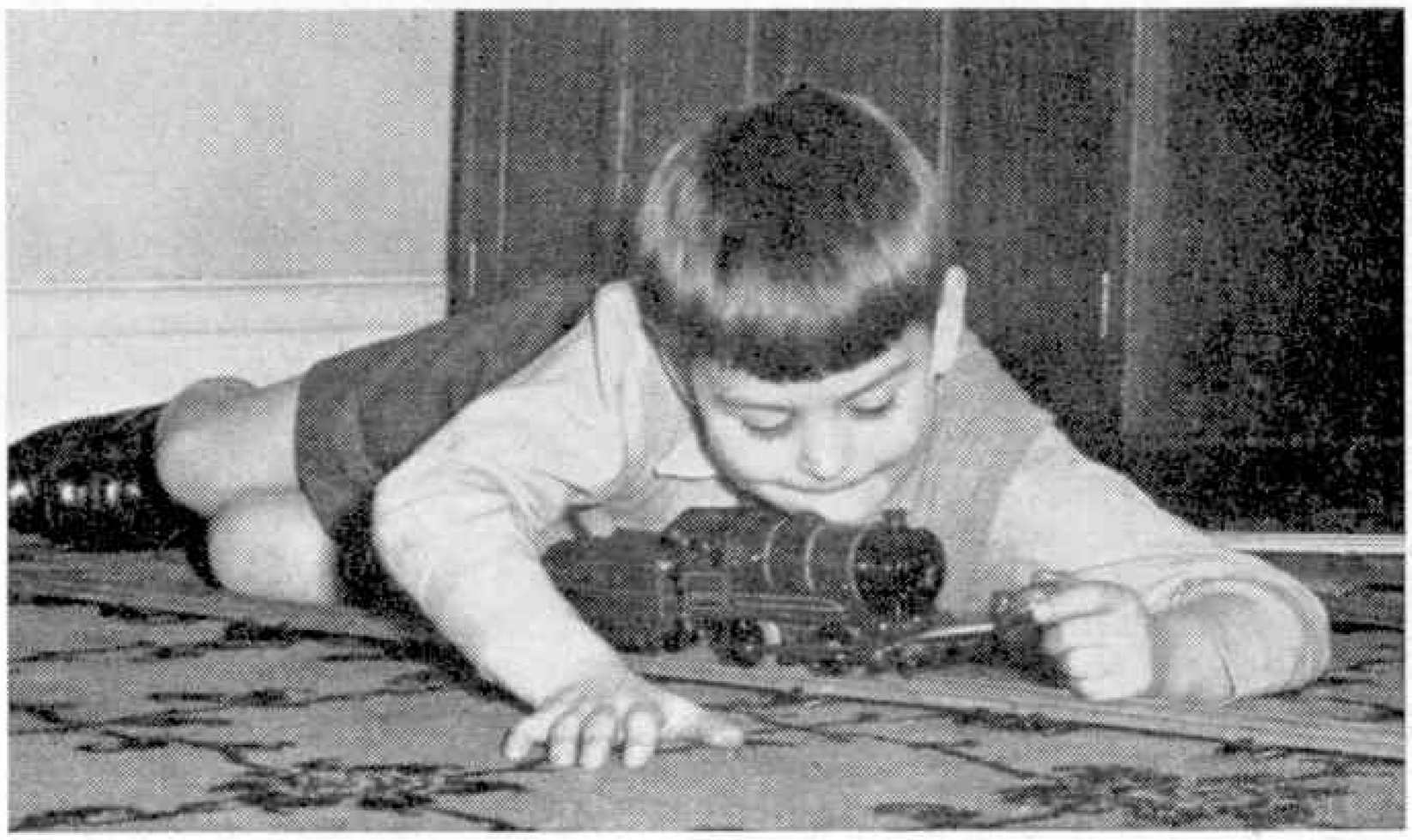
June 1954

Successful Conferences

I suppose you will think that the picture I have chosen this month shows a small boy playing with his train. But there is more in it than that. Just notice what Peter Sandy is doing. An engine driver arrives at the shed well before the time when his locomotive is to be taken out, so that he can go round it to make sure that it is fully prepared for the work it is to do. Thoroughness is the keynote to success in everything, and Peter's locomotive will run better, and will suffer less wear, just because he too is setting about things the right way. For the next stage in this study of concentration look at the picture on page 300. Andrew Behrens, who is there seen watching his Hornby-Dublo train, is as intent on good running as Peter Sandy.



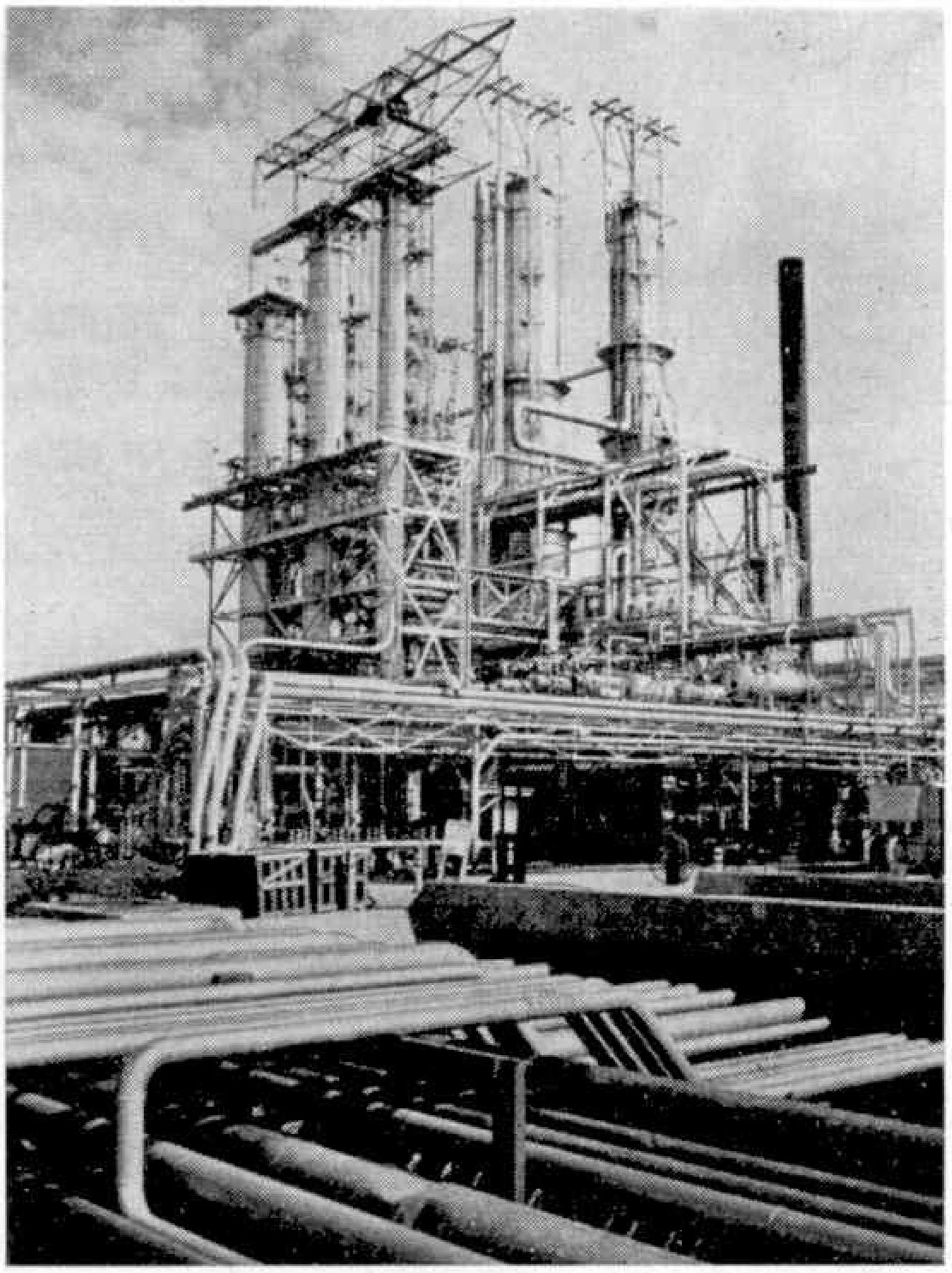
A study in concentration. The driver, Peter Sandy, goes round his engine with his oil can just before a spell of running.

Many other readers of the Magazine too make sure that their tracks are well laid, their rolling stock is in good order and running is as much like that on real railways as possible. I should like to hear about their layouts and to reproduce diagrams and photographs of them in the *M.M.*, a wish that applies also to the model-building of Meccano enthusiasts and to the fine road layouts of Dinky Toys owners.

One thing that always interests me about all efforts of this kind is that the actual owner of a railway, a Meccano Outfit or a collection of Dinky Toys is very seldom the only one who is concerned in these efforts. In fact, almost always there seem to be conferences, the delegates to which are fathers and mothers, brothers and sisters and other relatives as well as friends. All these delegates have the same idea in their minds—to ensure that everything concerned with their activities is in good order and that real advances are made.

I like conferences of this kind and often think they could serve as examples to many of those taking part in international conferences, which too often do little, if anything, to bring about agreement or progress of any kind.

The Editor



The No. 2 Distillation Unit at Stanlow Refinery, near Ellesmere Port, Cheshire. The illustrations to this article are reproduced by courtesy of The Shell Petroleum Co. Ltd.

A Great Oil Refinery

The Shell Installation at Stanlow

By the Editor

AT Stanlow, near Ellesmere Port, on the Cheshire side of the estuary of the Mersey, is a gigantic Shell refinery, one of the largest and most complete in Europe. Its towering chimneys and the tall columns of its distillation plants are familiar sights by day to all who live on Merseyside, and motorists driving along the splendid road bounding the refinery are made aware of it at night by the eerie light of two soaring ever-burning flares, high up on the tops of chimney stacks, where waste gases produced in the refinery are burned.

Stanlow was started as long ago as 1922, and since then it has spread out over the countryside until it occupies nearly 2,000 acres, almost two-thirds of which are taken up with refining plants, tanks and distribution facilities. Everywhere there are great pipes of all sizes, from bunches of large ones, laid parallel to each other in concrete-lined trenches and through which crude oil is pumped into the refinery from the docks at which the ocean-going tankers are berthed, to the thousands of smaller ones snaking skyward on the columns and towers of the refining units.

There are indeed more than 700 miles of pipeline within the Stanlow Refinery, and they are units in the great chain of pipes in which oil and petrol remain hidden practically throughout their existence. Those who make steel, locomotives and most other products see what they are handling. But the worker in an oil refinery never sees the materials with which he is working except when samples are drawn for testing purposes, for from oil well to tanker, and from tanker to refinery, they flow through pipelines and never come to light until they are delivered into the tanks of cars and lorries.

Stanlow refinery is one of the largest in Europe, so large that communication inside it has called for the construction of 16½ miles of road and 14½ miles of rail. It is also one of the most complete in Europe, and indeed the only one in Great Britain where everything is made that an oil refinery can produce. If I set out to explain all that can be seen there I should require a book, not just two and a half pages of the *M.M.*

When the crude oil enters the refinery it is a thick black liquid with a greenish sheen, not at all pleasant to look at. Its transformation into something more attractive, and more directly useful, is brought about by distillation. Every *M.M.* reader knows what distillation means—heating a liquid and condensing

the vapours driven off from it—but distillation in an oil refinery is not quite so simple as that. The oil is heated, by pumping it through pipes that line furnaces in which roaring flames heat it and turn it into vapour, which is passed up what is called a fractionating column, a tall tower in which the different constituents derived from the oil condense at different heights. The least volatile condense as the vapour begins to rise in the column and the more volatile higher up, so that they can be tapped off separately to give a series of fractions.

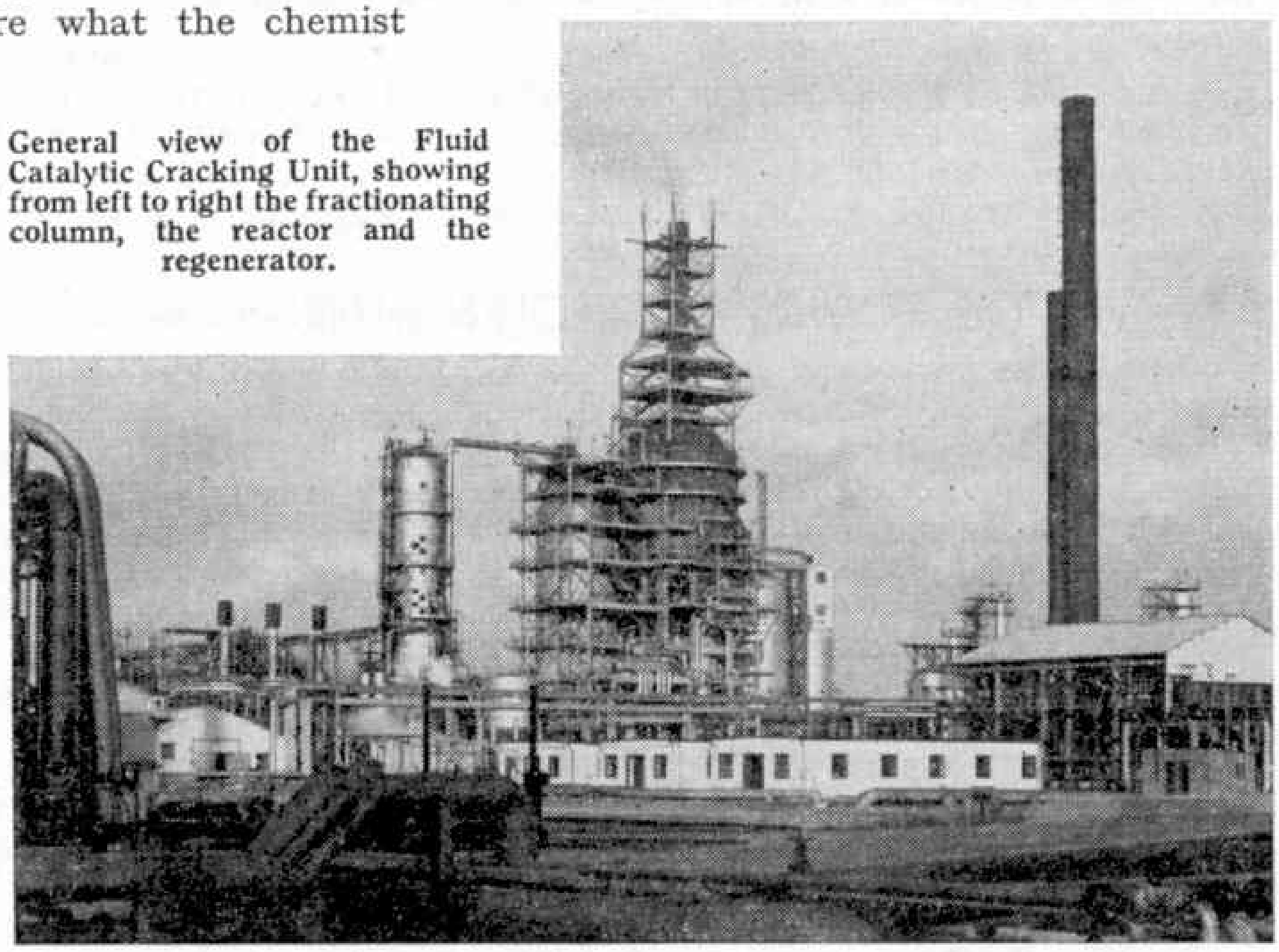
Distilling the crude oil gives three fractions that are concerned in the making of petrol. One is a fraction that can be sent straight to the final treating plant, as will be explained later. A heavier fraction, that is one not quite so volatile, is gas oil, which derives its name from its use in the gas industry to supplement supplies of gas made from coal, and another, this time a lighter product, is naphtha. By the magic of chemistry more petrol can be derived from each of these, for blending with the petrol already obtained, thus increasing the yield and also adding to the octane rating and power of the product.

Both processes are what the chemist calls catalytic, that is, they are carried out in the presence of a substance that itself does not change, but in some way makes the changes possible. Let us look at the process undergone by gas oil first, to illustrate what this means. This is carried out in the fluid catalytic cracking plant, a name that the petrol experts shorten for their own convenience to cat-cracker. They call it a cracker because heating the gas oil in the presence of the catalytic agent cracks the oil, or breaks it up, into lighter constituents, which are valuable components of the petrol we use in motor cars, lorries or buses.

There is a picture of the Stanlow cat-cracker on this page. The cracking is carried out in the reactor, in the centre of the plant, where the hot oil vapours and the catalyst swirl and mix thoroughly, coming into intimate contact for a few seconds. It is during these few seconds that the oil vapours are cracked, a process in which the catalyst plays the important part because its particles are exceedingly fine, so fine in fact that it moves through the plant like a liquid. This means that it has a large active surface. The normal charge of catalyst is 500 tons, and the individual grains are so small that their total surface area is about equal to that of Switzerland!

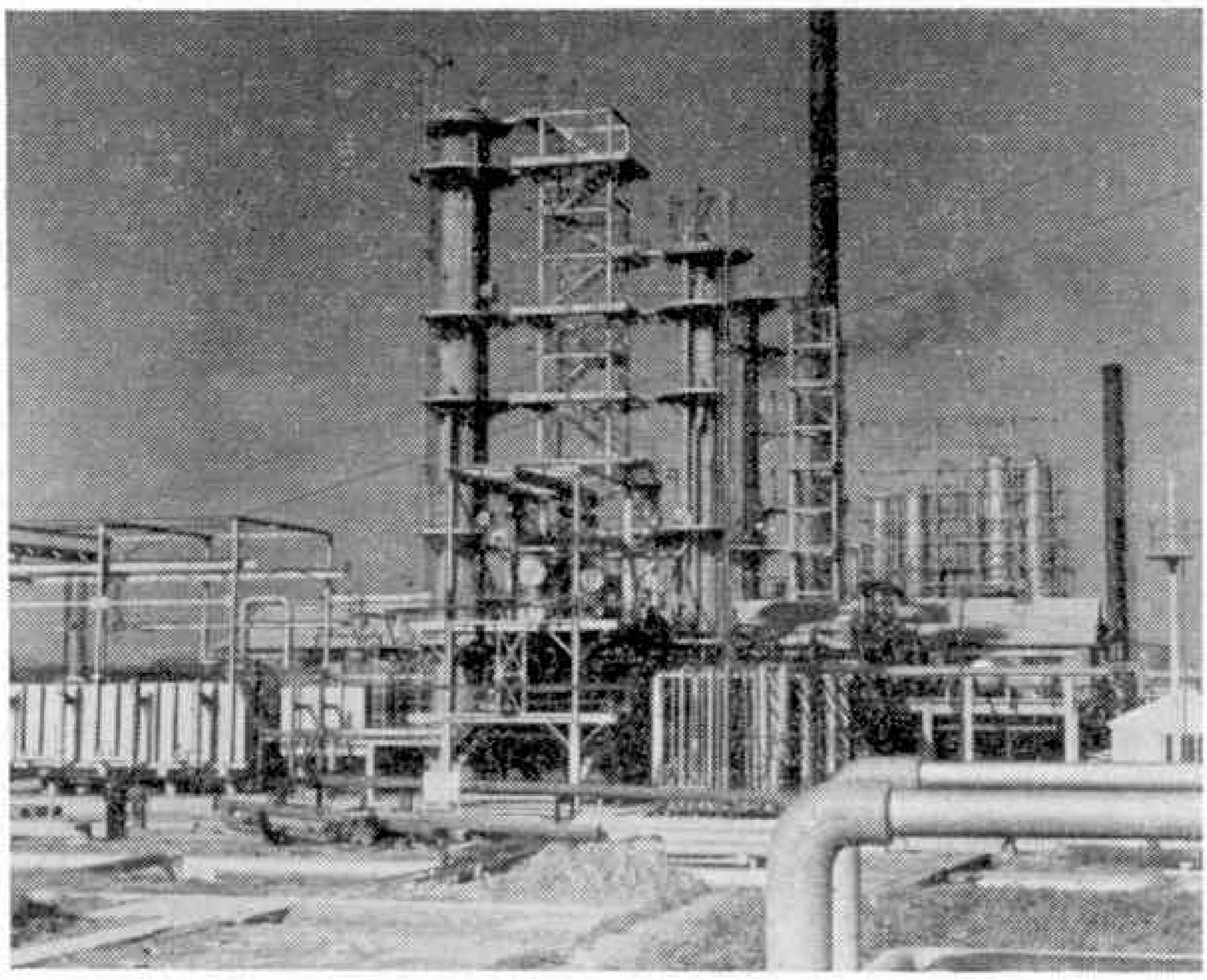
The whole action of the cat-cracker is continuous. The gas oil vapours and the catalyst enter the reactor, the spent catalyst passing away to the regenerator, the wider container on the right of the plant, while the cracked oil vapour passes on to the fractionating column on the left. In the regenerator the carbon and other impurities formed in the catalyst are burned away and it is returned to the reactor, ready to carry out its useful purpose again.

Then there is the platformer. This is another of the short words that sum up several long ones, in this case platinum catalyst reforming unit. This is the plant that produces high grade petrol components from naphtha, the lighter product of earlier distillation. It is the latest addition to the vast array of refining



General view of the Fluid Catalytic Cracking Unit, showing from left to right the fractionating column, the reactor and the regenerator.

plants at Stanlow and was actually the first of its kind to be built in Europe. When subjected to heat and pressure, with the catalyst to help in the process, the molecules of the hydrocarbons in the naphtha are rearranged, or reformed, to give a petrol of higher octane value than that of the original naphtha, together with gases, which incidentally are themselves treated in other plants to produce additional petrol components.



The Thermal Reforming Unit, with No. 1 Distillation Unit in the background.

To sum up, there are in the main three constituents of the petrol that we know—the light petrol produced in the distillation units, that formed in the cat-cracker and the re-formed petrol from the platformer. All these can be blended to produce the kind of petrol required, and at the same time impurities that give corrosive properties and a sour or offensive smell are removed.

Here then is a very brief glimpse of the great Stanlow refinery. I have only been able to touch on the main work carried on in it. Others among the hundreds of different products include lubricating oils, fuel and gas oils, engine oils, transformer oils, medicinal oils, bitumen for road surfacing and an immense range of chemicals of all kinds. Other interesting Stanlow products are detergents that form the foundation of modern soapless washing powders, and sulphur, more than 10,000 tons a year, which comes from an impurity in crude oil, and finds its way out of the cat-cracker as hydrogen sulphide, well known to all schoolboys.

THE BOEING STRATOFREIGHTER—(*Continued from page 269*)

1.1 man-hours per pound on the KC-97G, despite the incorporation of more than 300 major design changes and an increase in weight from 120,000 lb. to 175,000 lb.

Typical of the design improvements was the introduction of airborne radar sets in 1950, the first time such equipment had ever been fitted as standard on a production transport. Designated AN/APS-42 (Air Force-Navy/Aerial Radar Search Model 42), the radar is an invaluable navigation aid, producing on its indicators a picture of mountains, lakes, rivers and cities over which the aircraft fly.

Its rotating scanner, housed in a radome under the C-97's nose, can also give warning of storms or obstacles in its path, enabling pilots to fly around bad weather areas and avoid the danger of collision with other aircraft or with high ground. And, as an added navigation aid, it picks up any automatic radar beacons in the vicinity, so that the navigator can check his position. All this for the addition of only 188 lb. to the aircraft's weight!

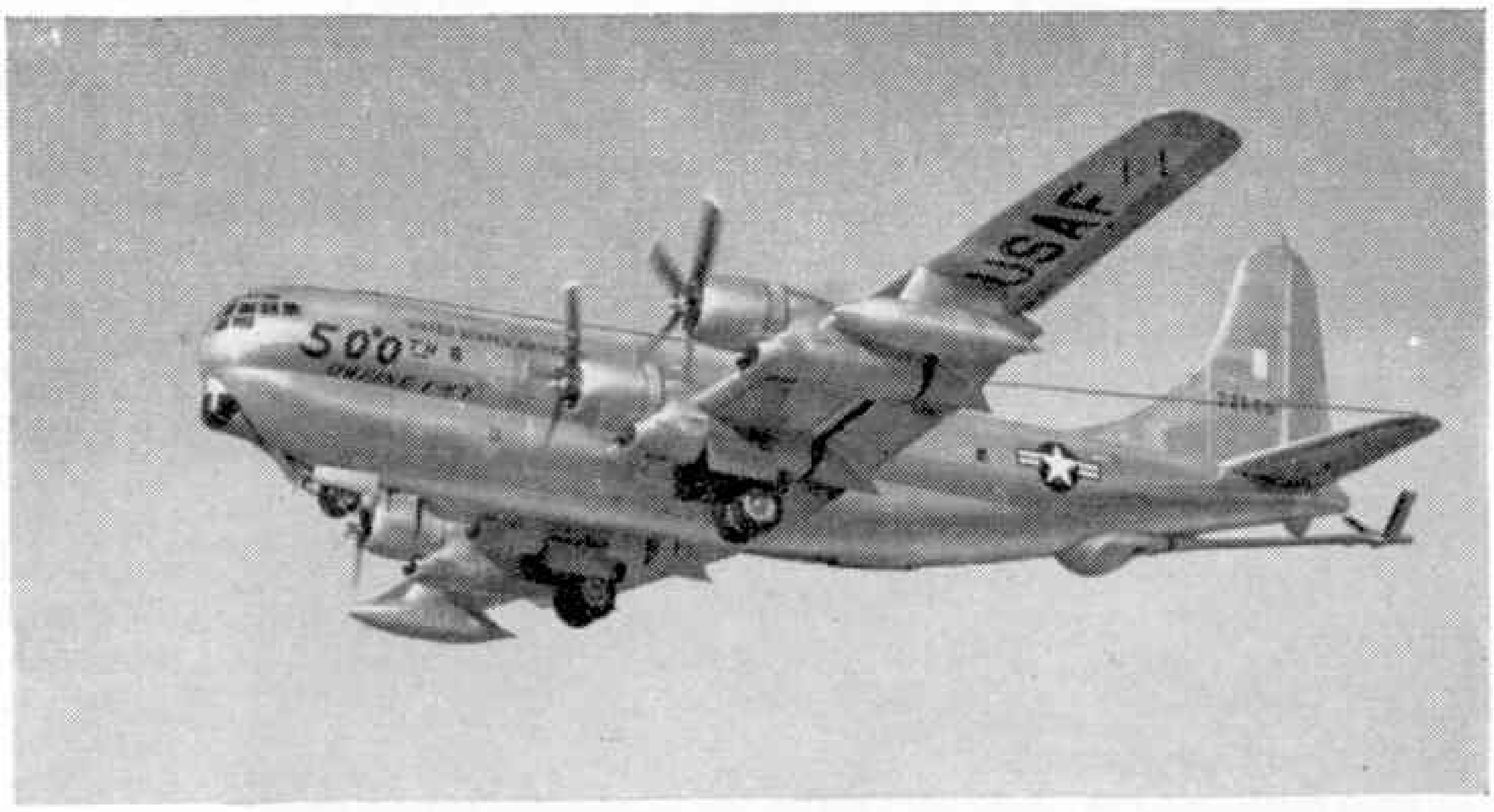
Boeing's great experience in building big four-engined aircraft over a period of 20 years, coupled with such devices, has made the Stratofreighter one of the fastest, finest and safest transports in the world. Now Boeing are hoping to make it even better by swopping the piston engines for turbines, and the first of two experimental C-97s, powered by four 5,700 h.p. Pratt and Whitney T-34 turboprops, is due to fly before the end of this year. It will have 63 per cent. more power than a KC-97G, and the lighter turboprops will also give a saving in weight of nearly 2½ tons. The result may well be a new lease of life for the Stratofreighter, enabling it to carry on as tanker-transport team-mate to Boeing's new B-52 Stratofortress bomber, which has been designed to carry the hydrogen bomb to any target in the world.

The Boeing Stratofreighter

By John W. R. Taylor

FEW post-war air liners have built up for themselves so great a reputation as the 56 Boeing Stratocruisers used by B.O.A.C., Pan American, Northwest and United Air Lines. It is only five years since the first of them entered service; yet by February of this year they had flown a total of 123,700,000 miles and carried more than 2,294,000 passengers, including our Queen, Sir Winston Churchill and hundreds of other great and famous people.

The Stratocruisers of B.O.A.C. and Pan American, in particular, have come to represent the peak of comfort and efficiency in piston-engined air liners, flying the luxury *Monarch* and *President* services as flagships of these airlines' transatlantic fleets. But behind all the Stratocruiser headlines is a story of which Boeing are even more proud; for in February they built their 500th C-97 Stratofreighter and, since then, have been turning out these giant aircraft at a rate of better than one every working day.



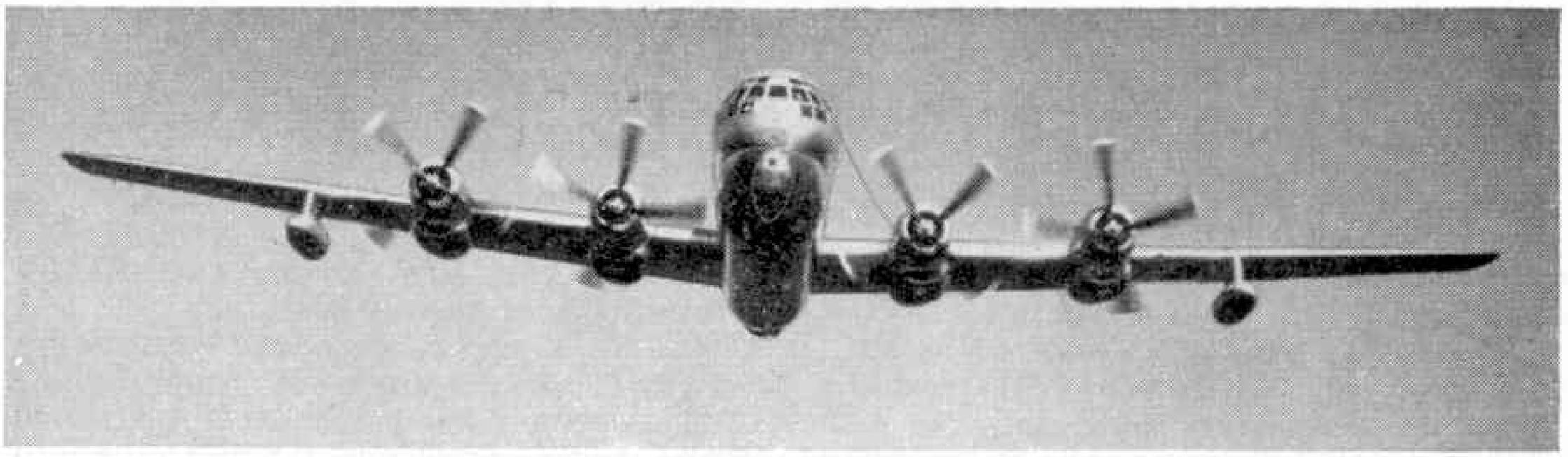
The 500th Boeing C-97 Stratofreighter taking off from the airfield at Renton, Washington, on its delivery flight. The illustrations to this article are reproduced by courtesy of the Boeing Airplane Company, U.S.A.

This is an incredible achievement, for although the Stratofreighter is less luxurious than its air liner counterpart, the Stratocruiser, it is still quite an aeroplane, with a weight of 175,000 lb. (78 tons), four 3,500 h.p. Pratt and Whitney R-4360 Wasp-Major engines and payload of 134 fully-equipped troops, or 83 stretcher cases, or three fully-loaded 1½-ton lorries or anything else of comparable weight and bulk. It has, in fact, become the standard long-range transport of the U.S.A.F. and the U.S. Military Air Transport Service, its versatility and high performance enabling it to do jobs that were hardly dreamed of when the first prototype XC-97 Stratofreighter flew in 1944.

The XC-97 was built as a straightforward transport development of the wartime B-29 Superfortress bomber. It had B-29 wings, tail surfaces and landing gear and the same 2,200 h.p. Wright R-3350-23 engines in oval nacelles. Its deep, figure-8 fuselage consisted basically of an 11 ft. diameter circular upper deck built on top of a smaller lower deck with the same diameter as the B-29's fuselage. All-up weight was 120,000 lb., and the "Strato" part of its name indicated that its cabin and flight deck were pressurised, so that it could fly in the sub-stratosphere at around 30,000 ft.

The general idea was to increase the mobility of U.S. bomber forces greatly by providing each wing of B-29s with a number of C-97s, which could carry the wing's ground crews and equipment whenever the bombers moved to a new base. By using the same engines and many B-29 components, servicing and "spares" problems were simplified, and the two aircraft had much the same performance.

The prototype showed its paces on 9th January 1945, by flying across the American continent from Boeing's factory at Seattle to Washington, a distance of 2,323 miles at an average speed of 383 m.p.h. carrying a 20,000 lb. payload. It was joined after a time by two more XC-97s, and the U.S.A.F. were so impressed by their performance that they placed

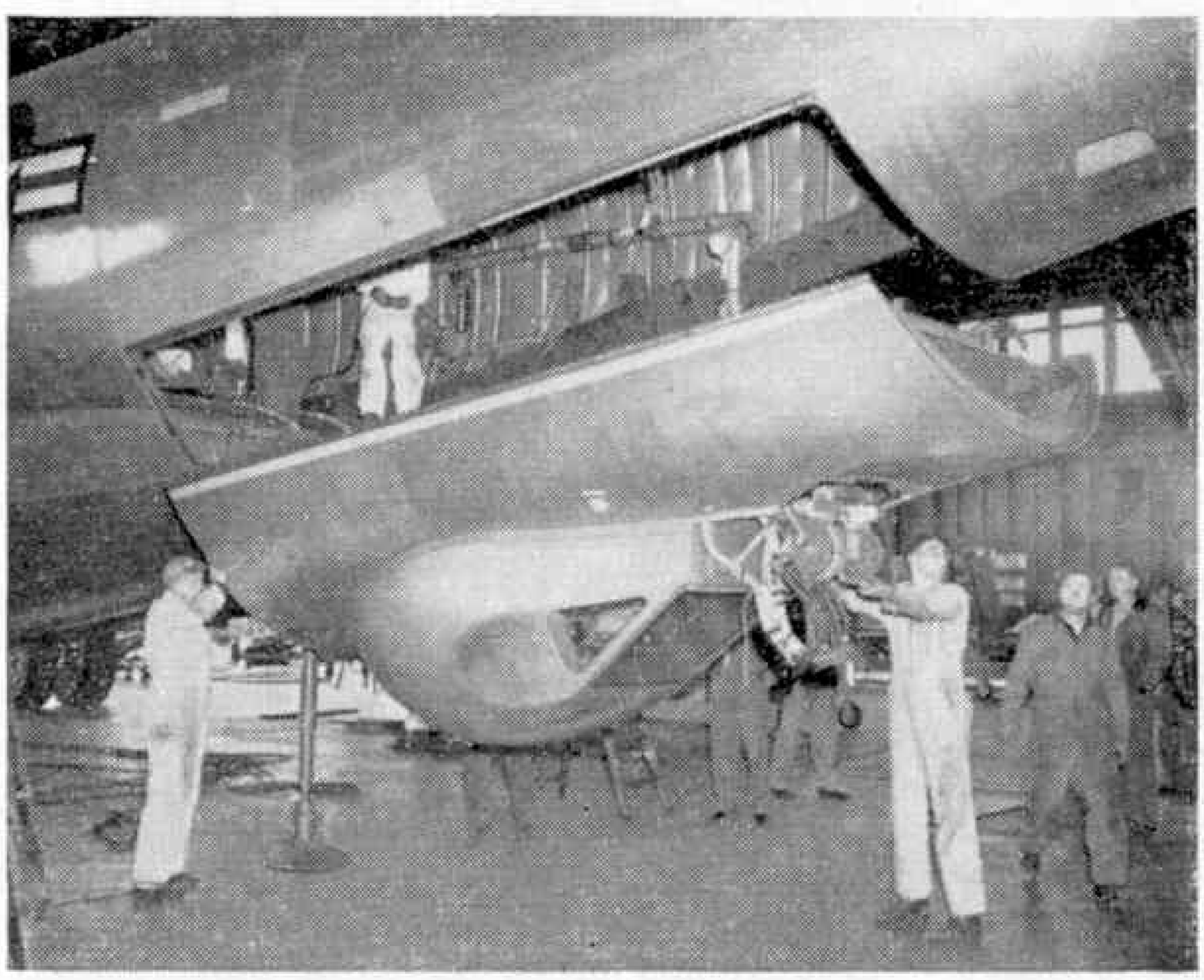


Front view of Boeing KC-97G, the eleventh model in the Stratofreighter series.

an order for a batch of ten YC-97s for service testing.

Meanwhile, the B-29 was being developed into the B-50 Superfortress, with four 3,500 h.p. Pratt and Whitney R-4360 engines, a lighter, more sturdy wing, taller fin and rudder, bigger payload and higher performance. It was only logical to introduce the improvements on the C-97 as well, with the result that all Stratofreighters since the YC-97, and all Stratocruisers, have been transport counterparts of the B-50 rather than of the B-29.

First major production version was the standard C-97A transport, with R-4360-27



Putting in place the boom operator's pod on a Boeing KC-97. It is from this pod that the boom operator controls the telescoping boom during aerial refuelling operations.

engines and normal payload of 41,400 lb., which it could carry for 3,750 miles at 300 m.p.h. The first was delivered on 15th October 1949. It was followed by a single YC-97B personnel transport, with the same type of engines but equipped like the civil Stratocruiser, with spiral staircases, lower deck lounge, galley and accommodation for 80 passengers and 17,000 lb. of freight.

Next major production version was the C-97C, first delivered in February 1951, which differs from the "A" only in having improved radio, heavier floor and higher payload. Like the earlier version, it has large loading doors and a ramp under its rear fuselage, so that vehicles can be driven straight into its huge main cabin, the ramp being raised and lowered by an electrically-operated cargo hoist which runs the entire length of the fuselage.

Only three C-97Ds were built. They were, in fact, specially modified C-97As, supplied to the U.S.A.F.'s Strategic Air Command as mobile "command posts", equipped as living quarters for senior officers during overseas training missions.

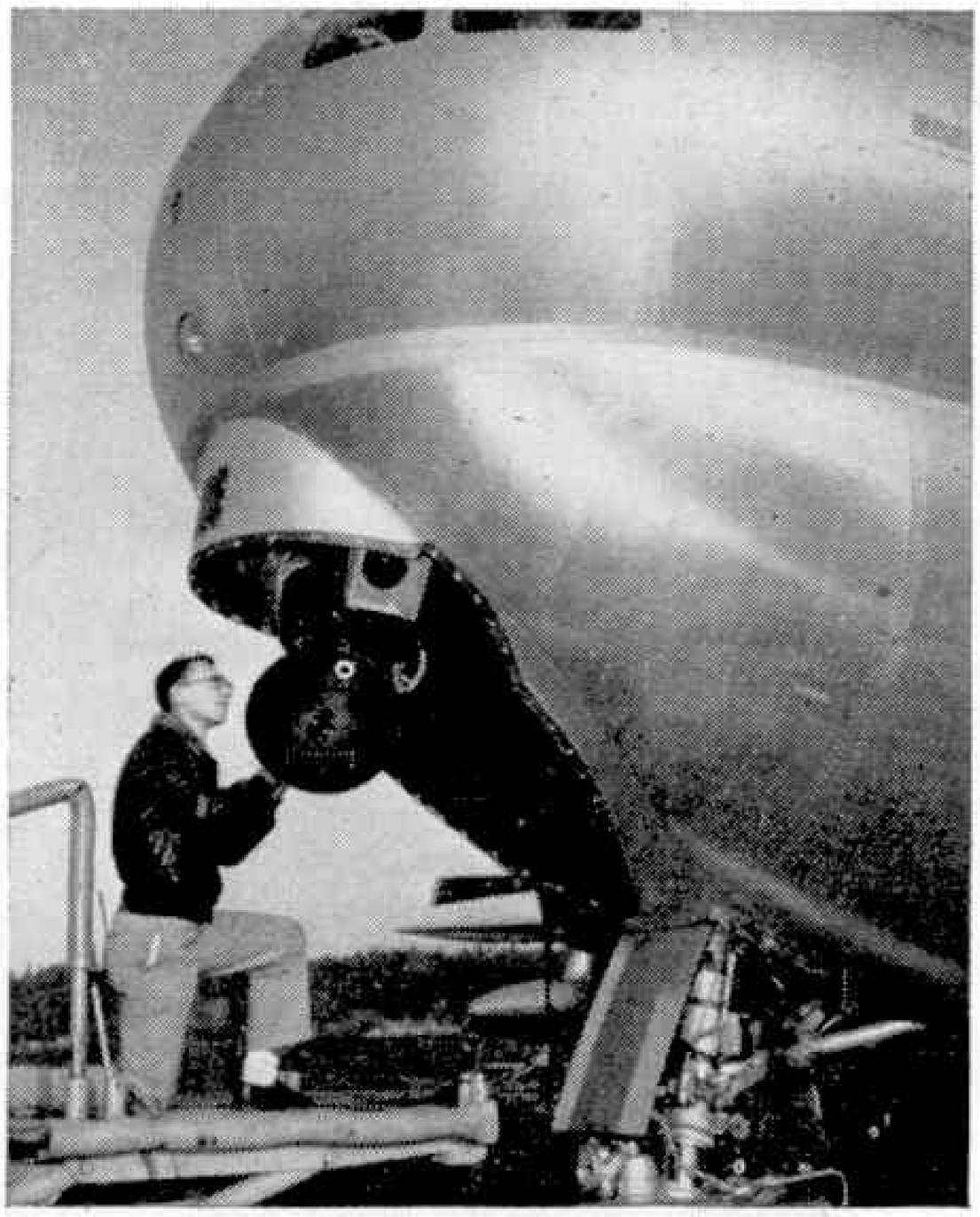
By 1951, therefore, the Stratofreighter was in service in fair numbers with both the U.S.A.F. and the U.S. Military Air Transport Service. Most of the M.A.T.S. machines were based in the Pacific area, to fly regular military cargo and passenger services between the United States and Japan; and it was these aircraft which did such a fine job during the Korean War by flying wounded Servicemen speedily and in comfort back to America for treatment.

But one of the Stratofreighter's most important roles was still to come. The U.S.A.F. had been interested for some years in the technique of flight refuelling as a means of increasing the range of their bombers and fighters. Using the British "flexible hose" system.

a B-50A had made a round-the-world flight, without landing, in 1949, being refuelled in mid-air at four points en route.

Boeing had developed their new "Flying Boom" method of flight refuelling as an alternative to the British scheme, and the U.S.A.F. at once ordered a number of B-29 Superfortresses to be converted into KB-29 "flying boom" tankers. Then somebody had the bright idea of using Stratofreighters instead as tankers. The advantages were obvious; a great load of fuel could be carried in their huge cabins and when not needed as tankers they could still be used for normal transport duties, offering great versatility and, hence, economy.

Boeing designed an ingenious "pod", containing the "flying boom", operator and controls, so that it could be substituted quickly for the Stratofreighter's normal rear loading doors and ramps. The fuel tanks and pumps on the top deck were also made quickly removable, so that the aircraft could be converted easily from a flight refuelling tanker into a transport, and *vice versa*. First of the KC-97Es, fitted with the new equipment and with improved R-4360-59 engines, was delivered to the U.S.A.F. in July 1951, followed by the KC-97F with R-4360-75 engines.



A Boeing electronics technician making final adjustments to the APS-42 radar antenna in the nose of a KC-97G Stratofreighter.

The present production version is the KC-97G, which is basically similar but with the flying boom "pod" and tanks re-positioned, so that they can remain in place when it is used as a transport, and with provision for carrying two very large external fuel tanks under its wings to increase still further its operational range.

The Korean War proved conclusively the value of flying tankers. Whole wings of Republic F-84G Thunderjet fighter-bombers, urgently needed to support United Nations ground forces, could be flown non-stop 2,400 miles from America to Hawaii, en route for Japan, by refuelling from KB-29 tankers in flight. Altogether 135 were ferried over the Pacific in this way; another 631 were subsequently flown non-stop across the Atlantic in "Operation Longstride", this time escorted and refuelled by KC-97s of the U.S.A.F.'s Strategic Air Command.

Meanwhile, introduction into Service of the B-47 Stratojet bomber, powered by six fuel-thirsty jets, had made flight refuelling even more important to the U.S.A.F., who assigned 20 Stratofreighters to each 45-plane wing of the bombers. Consequently, when the 305th and 306th Medium Bomb Wings of Stratojets made mass training flights to England last year, the C-97s came too, and indeed, made possible the long transatlantic flights from Turner Air Force Base, Georgia, to Lakenheath in Norfolk. Some idea of the scale of the Strategic Air Command's reliance on flight refuelling can be gained from the fact that its aircraft make a mid-air refuelling contact on an average once every 15 minutes, 24 hours a day, seven days a week.

Today, more than 5,000 persons, a third of them women, are busy producing Stratofreighters at Boeing's Renton factory; and more than 200 subcontractors hold contracts from the company, worth some £41 million. The Ryan company, for example, manufacture the entire rear fuselage section and boom operator's "pod"; and Rohr Aircraft assemble complete power plants ready for mounting to the airframes.

Careful design and development have continually reduced production costs. Man-hours required to build the big aircraft have been lowered from 5.9 man-hours per pound weight for the first production C-97A to (*Continued on page 266*)

Vancouver's New Bridge

A High Level Steel and Concrete Structure

VANCOUVER, in British Columbia, now has the magnificent new bridge seen in the illustrations on these pages. This spans False Creek, a waterway passing through the city, crossing Granville Island, in the Creek, on the way, and the new structure is known as the Granville Bridge. It represents only one of many great improvements that are planned for Vancouver in the immediate future.

It is interesting to look back over the predecessors of the new Granville Bridge, of which there have been two. The first of these was erected in 1888 and was built with the aid of wood pilings, planking and railings, steam supplying the power required in constructing it. The second bridge followed in 1909. From this most of the wood was missing, although its approach viaducts were of this material, and instead steel beams and girders took over, with steam still supplying most of the power. Today the use of reinforced concrete and tremendous steel girders has given a great new structure of beauty, strength and grace.

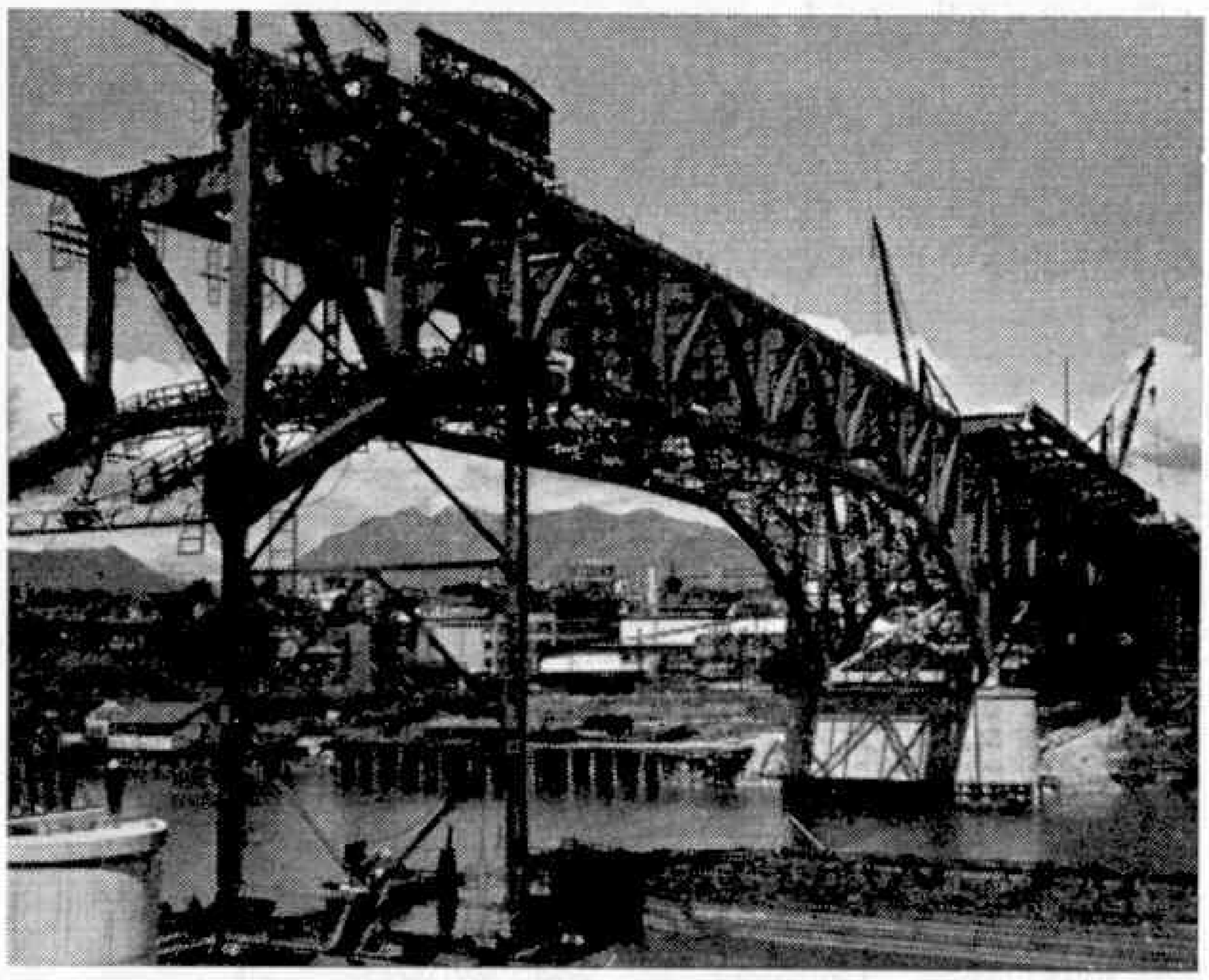
The 1909 bridge cost little more than half a million dollars. It had a total length of 2,824 ft. and provided a vertical clearance at high water of about 40 ft. It had a swing span, the opening of which often caused great inconvenience, especially when it happened during rush hour periods. The timber approaches also required considerable maintenance, and introduced a risk of fire.

When at length it was decided that the bridge must be replaced, it was first suggested that a tunnel should be driven under False Creek instead of building a new bridge. But this proposal was abandoned, partly because of the nature of the site and partly because of the heavy cost. Instead it was decided to build a high level bridge alongside the existing one, so that an opening span would not be required, and this resulted in the planning and erection of the present structure.

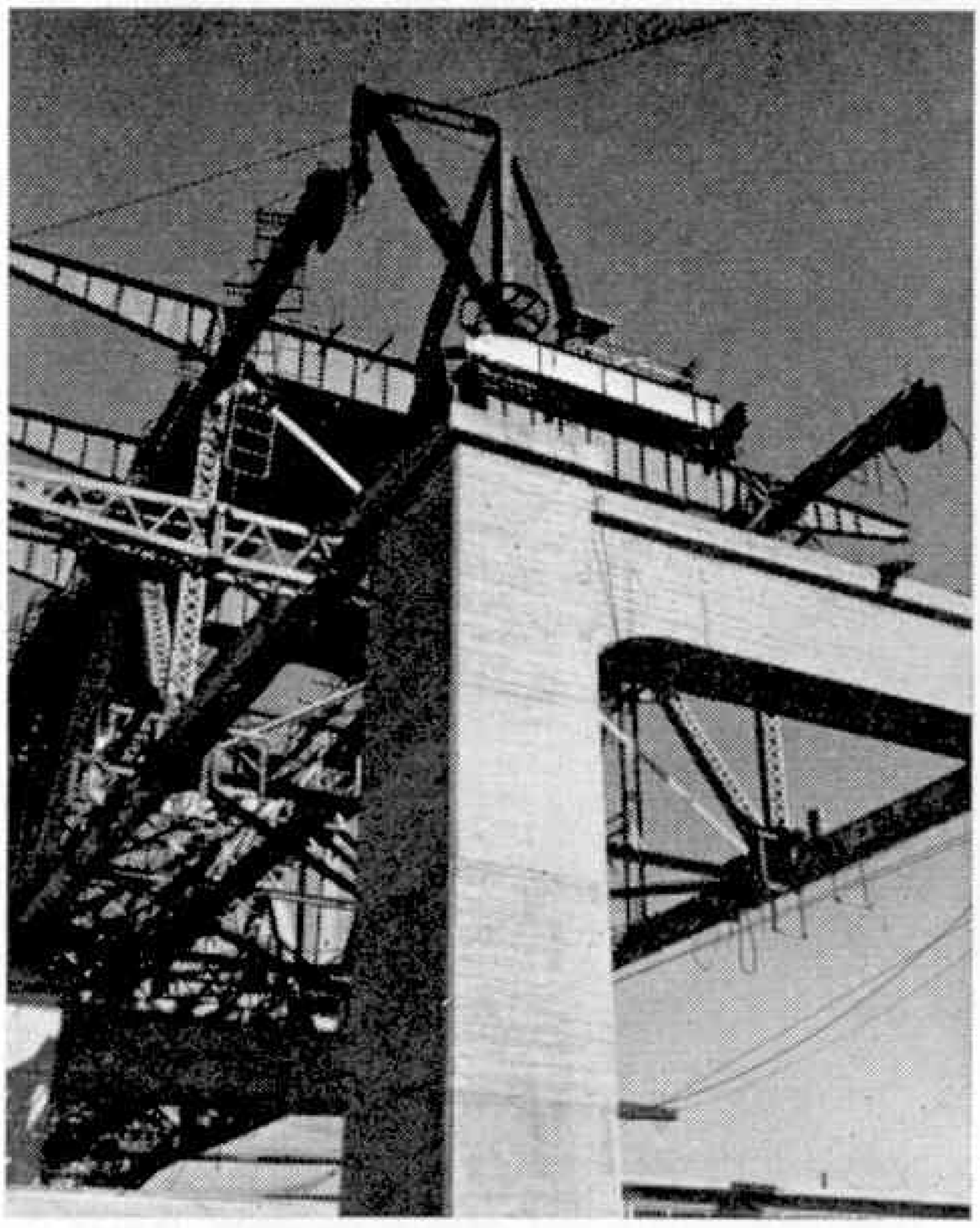
The new bridge has room for eight lanes of traffic and its approaches slope gradually and easily up to its level on both north and south sides of the Creek. Instead of the 40 ft. of the older bridge it has the imposing vertical clearance of 90 ft. over the navigable channel of False Creek.

In many ways the most interesting feature of the new bridge, however, is the splendid provision made for approaches to it, on both north and south sides. The lower illustration on the opposite page, which shows a model of the bridge, gives a good idea of what has been done in planning these approaches to speed up ordered traffic across the structure.

On the north side there are two clover leafs, to provide for easy movement between the Bridge and Pacific Street, which is parallel to the Creek and is being widened, and in addition there are two ramps, one on each side of the bridge, connecting with streets running north,



The main span of Vancouver's Granville Bridge is here seen just before completion. This span was cantilevered out 300 ft. to the false bent or support shown.



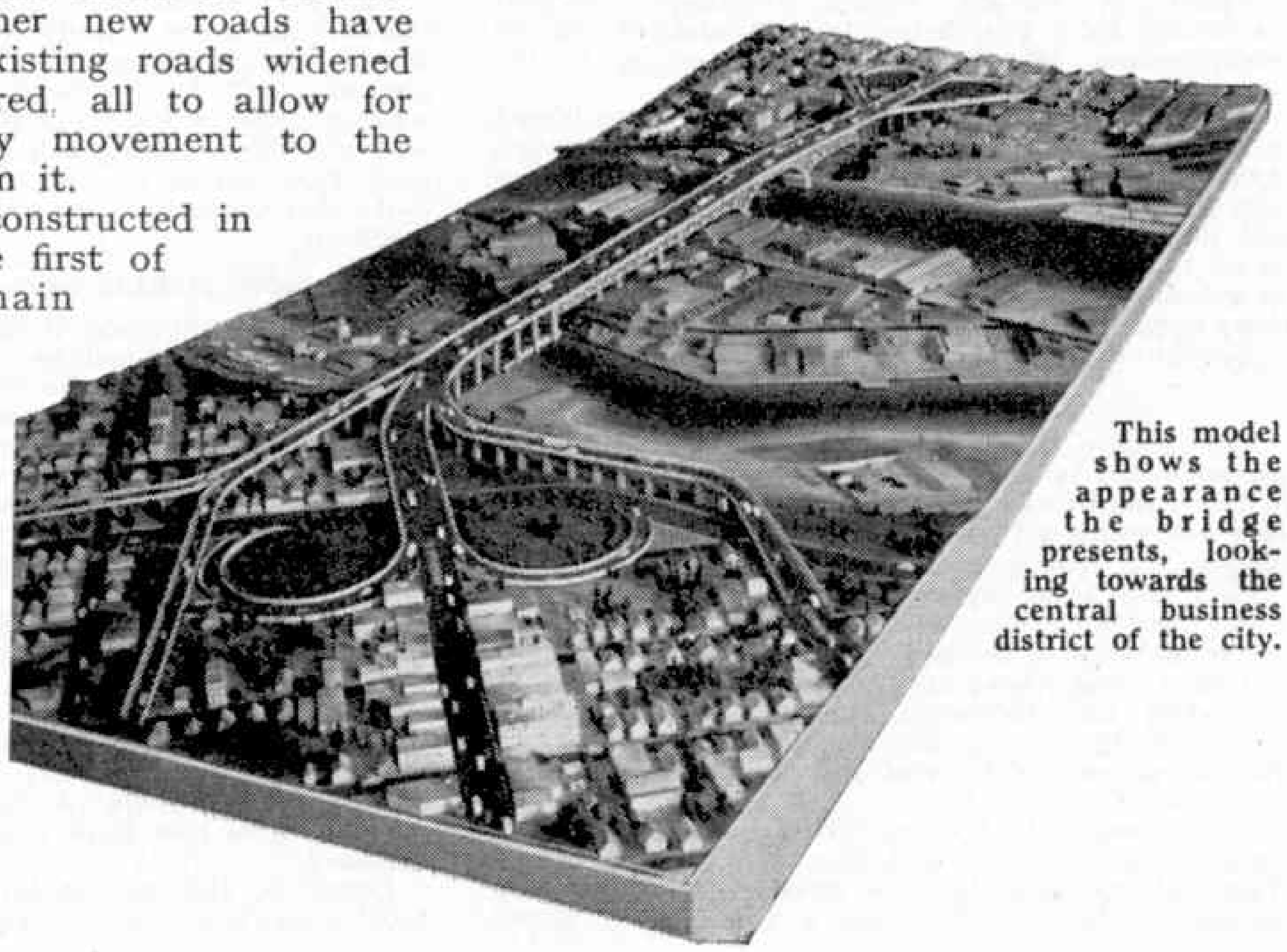
Steel erection in progress. The illustrations to this article are reproduced by courtesy of Mr. J. C. Oliver, City Engineer, Vancouver.

which have been converted into one way streets of appropriate direction. At the south end there are the even more elaborate arrangements seen in the foreground of the illustration of the model. There are two clover leafs and three ramps, providing for distribution of the traffic in different directions, and other new roads have been made, and existing roads widened and otherwise altered, all to allow for speedy and orderly movement to the bridge or away from it.

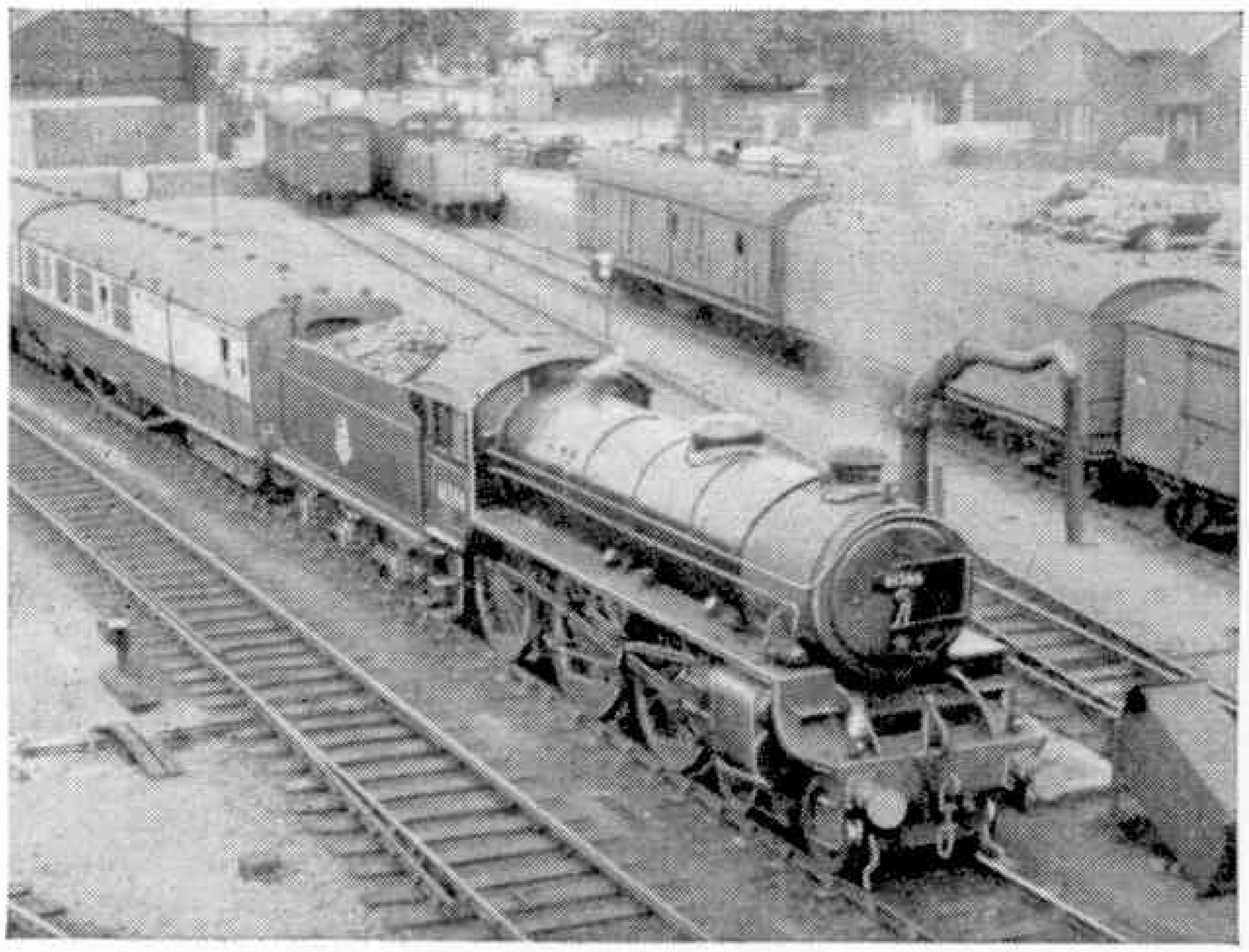
The bridge was constructed in three sections. The first of these was the main central part, over the Creek and Granville Island. This is built of structural steel on reinforced concrete piers, and the remaining illustrations to this article give an excellent idea of the scale of the work and of the manner in which it was carried out. The channel span provides for a clear distance between the protection fenders of the piers in the water of about 370 ft., and a clear dredged channel of 350 ft. is provided. On the bridge itself the distance between the kerbs, which are 14 inches high, is 88 ft., which is ample for the eight lanes of traffic allowed for, and the footwalks on each side are 7 ft. in width.

The remaining sections were the connections and approaches on the north and south sides. While constructional work on all three sections was in progress the existing bridge was kept open to traffic, and during this period no work was done on the end portions of both ends of the new bridge where these intersected the old bridge. When the three sections of the bridge, apart from the prohibited portions, were completed and open for traffic, the old structure was closed and dismantled, after which work on the new bridge was speedily completed.

Some further details of the bridge will give ideas of its size, and of its value to the city of Vancouver. About 25,900 cu. yds. of concrete have gone into its construction, with 985 tons of reinforcing steel and 8,425 tons of structural steel. Its total length is 1,772 ft. 6 in. Its eight traffic lanes include four for trolley coaches, which in these modern days have replaced street cars running on rails. The contract price for the bridge was 6,254,376 dollars, approaching £2,500,000.



This model shows the appearance the bridge presents, looking towards the central business district of the city.



An up train leaves Peterborough in charge of B1 class 4-6-0 No. 61366. Photograph by R. Russell.

Railway Notes

By R. A. H. Weight

Apprentices' Training School at Wolverton

The large carriage and wagon works at Wolverton, about 52¼ miles north of London in Buckinghamshire, are a familiar sight from trains passing along the main line to and from Euston. In early days locomotives also were constructed there, and now the London Midland Region has opened a learn-as-you-earn training establishment, fully equipped with workshops, machines and lecture rooms. Trainees are accepted on leaving school, receiving practical instruction for a year before being transferred to the works proper, where training continues up to the age of 21.

The apprentices' school at Derby has been mentioned in an earlier issue. It also is typical of the thorough manner in which British Railways are applying their instructional and training schemes for various grades and departments in different parts of the country, so as to ensure that those young people who wish to achieve a successful railway career should have every opportunity of doing so. Descriptive information is readily obtainable by intending applicants.

Southern Tidings

The Rugby Football Ground at Twickenham is almost world famous. The Twickenham S.R. station in the Thames valley, on the London outskirts, was over 100 years old and hardly adequate for handling regular and special traffic in frequent electric trains. It has now been replaced by a fine new structure with five platforms, two of which are bays for accommodation of football crowds. There are centrally heated waiting rooms and offices, modern lighting in new style and additional footbridges. Part of the new building housing the ticket hall, parcels office and telephone kiosks was not quite completed at the time of writing.

There was recent news from Brighton of trial runs as light engine, and also with special empty trains, of the powerful new diesel-electric main line locomotive No. 10203. Class 4 2–6–4T No. 80082 also has been completed and two more small Terrier 0–6–0 tanks have received general overhaul, as has one of the Atlantics at Eastleigh.

Red backgrounds to the nameplates of some of the Schools class engines brighten their appearance, as is the case with W.R. Halls and other lined black locomotives used a good deal for passenger work. It would be nice to see the idea extended.

Locomotives withdrawn include 4–4–0s numbered 30282, 30471 and 31315 respectively of classes T9, D15 and E, C 0–6–0s Nos. 31038 and 31572, and R1 0–4–4T No. 31703.

Electric colour light signalling has been brought into use in the busy multiple-junction area between Norwood Junction, Selhurst and East Croydon, with its sidings, burrowing and flying junctions, on the main routes from London Bridge and Victoria towards the coast, with their four tracks as well as numerous local or connecting lines. The new all-electric signal boxes at Norwood and Gloucester Road Junction, north of East Croydon, replace six manually operated cabins and control the whole busy area concerned. During the changeover, which was effected smoothly, thanks to long and careful planning, in the course of a Saturday night, some interesting alternative routes were used by steam mail, newspaper and other trains, taking West Country and U1 engines by way of Ladywell, Selsdon, Oxted and East Grinstead to Haywards Heath for example.

The final step in the provision of continuous colour-light signalling, with latest electrical equipment, between London and Brighton will be the installation as stage 4, probably next year, from East Croydon to Coulsdon North through Purley.

New Adjustable Seating in French Trains

Following experiments that met with appreciation, the French National Railways are converting 18 more second class coaches from side corridor to centre gangway type for use from next autumn in express services between Paris and Brussels, Calais and Rome and elsewhere. They will be fitted with armchair seats that can be rotated to face in either direction and also adjusted to provide various reclining positions.

London Midland News and Developments

Following completion of the extensive improvement scheme covering signalling, track layout and arrival platforms at Euston, the main departure platforms numbered 12–15 on the west side have been taken in hand for widening, resurfacing and partially altering in position, in conjunction with a rearrangement of siding lines, in order to provide better accommodation for passengers.

Allocation of new 2–10–0 freight locomotives to the Midland Division began with Nos. 92008–9, announced to be shedded at 15A, Wellingborough. B.R. class 5 4–6–0s Nos. 73030–1 fitted with Westinghouse brake have been on fast mineral train trials over the Midland Division, as have Stanier 2–8–0s. One of the Hughes-Fowler 2–6–0s now fitted with Reidinger rotary poppet valve gear, No. 42824, has been in Rugby Testing Plant. A number of the early Ivatt 430xx Moguls now have a single instead of a double chimney.

Driver G. Hall of Camden shed, who was retiring soon afterwards, with a heavy 16-coach Blackpool

and Wigan to Euston express weighing well over 500 tons gross, did well with rebuilt Patriot 4–6–0 No. 45522 *Prestatyn*, on a 166-min. timing for 158 miles, regaining most of the time lost by signal delays round about Nuneaton, Rugby and Castlethorpe.

Driver W. G. Pile, another top link driver at the same depot also reaching the end of his honourable service owing to the age limit, whose remarkable run with the Rolls-Royce special on *City of Edinburgh* I mentioned recently, actually covered the 158 miles from Crewe in less than that number of minutes in April, arriving Euston early after a late start from Crewe on a Preston Jubilee 4–6–0, No. 45582 *Central Provinces*, with 13 coaches, just over the limit in weight laid down for that class of engine on a "special limit" 165-min. schedule. This was on the up Friday Windermere to London train, which runs daily in the summer holiday season as the *Lakes Express*. There were no adverse signals, just one permanent way slowing south of Stafford. It was an excellent steady run.

Another good trip logged over the same track by Mr. N. R. Harvey was on a Sunday evening when Driver Robey of Edge Hill, Liverpool, gained about 12½ minutes with 16 coaches, recovering delays and arriving Euston to time with calls at Stafford and Nuneaton. The engine was 7P No. 45527 *Southport*.

Jubilee No. 45618 New Hebrides has the 4.15 p.m. from St. Pancras to Manchester well in hand near Radlett. Photograph by G. R. Mortimer.

Eastern and North Eastern Locomotive Doings

One is accustomed to hearing of high mileages attained by principal express locomotives engaged on long distance duties; but the achievement of A4 No. 60034 *Lord Faringdon*, one of the streamlined Pacifics stationed at King's Cross during a period when a number of sister engines were undergoing repair or overhaul in works, seemed exceptional, as nearly 2,450 miles were covered in eight days, including four runs to Leeds and back, one to Newcastle and back on the very fast *Tees-Tyne Pullman*, and two round trips from London to Grantham and back. Other expresses hauled included the *Yorkshire Pullman* and the 8.20 p.m. night mail from Kings Cross.

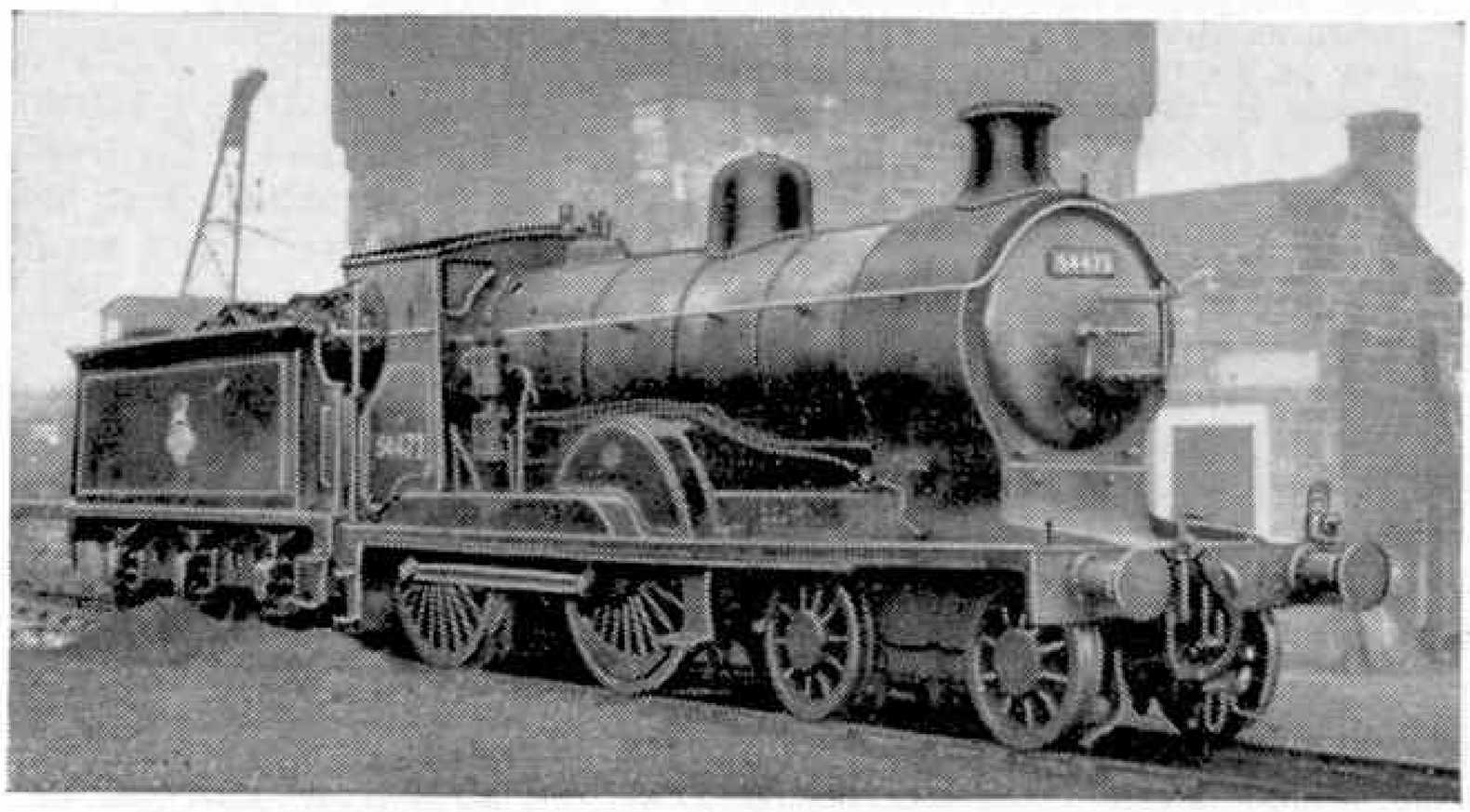
N1 0–6–2Ts are engaged on freight duties in the Nottingham area. An L1 2–6–4T No. 67772 was transferred to Grantham shed for runs to Nottingham and Derby. The first to be withdrawn of the 174 large ex-G.C.R. 0–6–0s of Class J11, known as "Pom-poms" and dating from 1901–10, is 64367. A good many are superheated and 30 were rebuilt with Thompson high pitched boilers. Director 4–4–0 No. 62650 *Prince Henry* has also gone.

Additions to the stock list lately noted were B.R. class 2 2–6–0s numbered 78016–8 allocated to Kirkby Stephen shed, 51H; No. 80080 class 4 2–6–4T to Plaistow, 33A; and No. 27001, Co:Co, or EM2 class, electric locomotive to 36B, Mexborough or its electric sub-depot.

Further L.M.S. type 2–6–4 class 4 tanks moved from the Tilbury line to Neasden were Nos. 42222 and 42225.

Electrically Controlled Shunting for London Yard

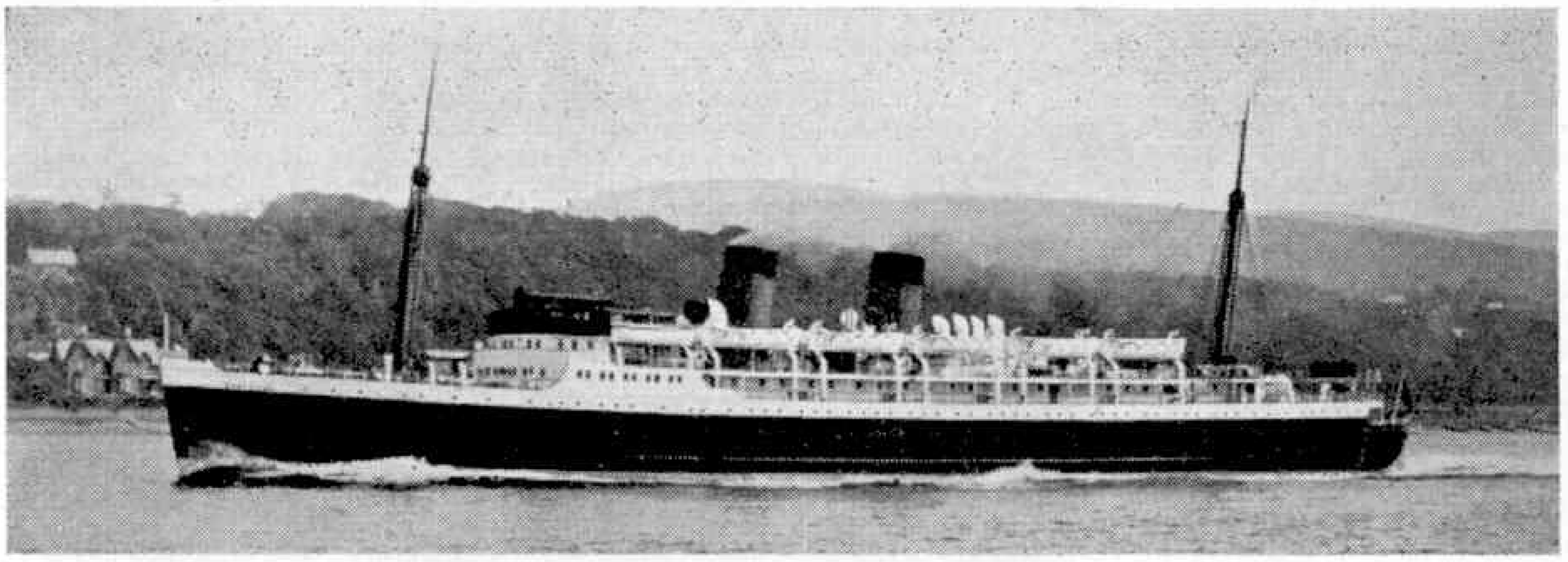
The Temple Mills freight marshalling yard is a vast establishment near Stratford, in East London, on the Great Eastern Section, E.R. When it is reconstructed and electrically equipped in accordance with plans now being completed, it will be possible to see electric point operation worked from a Control Tower diverting wagons rapidly into various sidings after being pushed over a hump, as well as electric retarders to check their speeds, in the same way as in the remarkable nests of sidings at Whitemoor, Hull and Toton. The equipment, however, will incorporate the latest improvements suggested by recent experience. Wagons are sorted more rapidly by this means.



A Scottish stalwart. Former Caledonian 4-4-0 No. 54472 at Forres on the Highland Line. Photograph by E. Higgs.

"The Gloucestershire Regiment"

In April last Castle class 4–6–0, W.R. No. 5017, formerly *St. Donat's Castle*, was named *The Gloucestershire Regiment*. Military and railway officers of high rank attended the naming ceremony at Gloucester Central station on the anniversary of the Imjin River battle in Korea, as well as present and past members of the Regiment.



A Famous Ferry Service

The Maori Joins New Zealand Fleet

By John P. Barrett

TO every true New Zealander the famous Inter-Island Steamer Express Service is known as the Ferry Run, even though the ships engaged in it are 7,000-tonners, offering facilities equal to those of any short sea passenger service in the world. In the 1870's, when the country was young, sea transport provided the only sure means of moving from one place to another. As the islands are separated by what can be one of the wildest stretches of water anywhere, stout, comfortable ships have always been required on the linking service, begun as a temporary weekly one by the Union Steam Ship Co. of N.Z. Ltd. with the 930-ton *Takapuna* in 1889. This compound-engined steamer, capable of over 13 knots, had been built in 1883 by the Barrow S. B. Co., one of the forerunners of Vickers-Armstrongs, for the long Dunedin-Onehunga run.

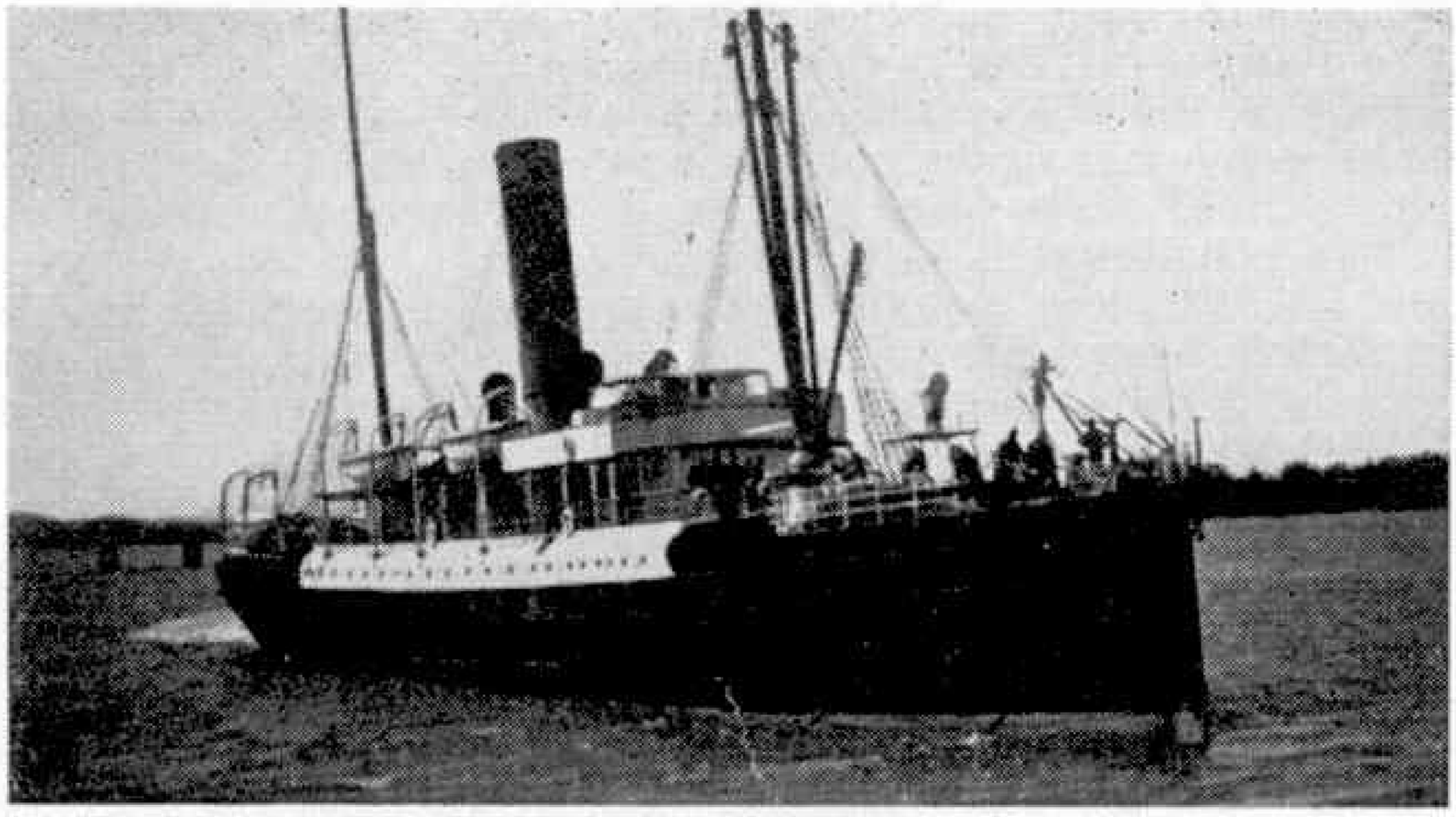
From 1st April 1895 the service became permanent, the ship inaugurating the service being the *Penguin*, 749 tons gross, built by Tod and Macgregor in 1864. Expansion of the service was rapid, and three trips a week were made after November 1896. Larger and faster ships were used, and in 1897 the famous *Rotonahana* entered the service. This vessel was a magnificent clipper-bowed, 15½ knot steamer of 1,727 tons, built by Wm. Denny at Dumbarton in 1879, and was the first vessel in the world to be built of mild steel, the first to be fitted with bilge keels and the first compound engined vessel in the Pacific. In 1903 she was joined by the *Mararoa*, of 2,466 tons gross. She had been built by Wm. Denny in 1885 for the trans-Tasman service. The *Mararoa* was the first vessel in the Pacific to have triple expansion engines and to have a service speed of 16 knots.

A daily service came in 1906, when the first vessel specially-built for the Inter-Island trade was ordered. This was the *Maori*, also built by Wm. Denny, in 1907. a handsome triple-screw turbine steamer of 3,399 tons gross, with a speed of 19 knots and modern accommodation for some 600 first and second class passengers. Like all the ships specially built for the Wellington-Lyttelton service, the *Maori* was fitted with a bow rudder to facilitate rapid berthing. She had attained a speed of 20.5 knots on trials, and covered the 175 miles of her journey in 9 hours 25 minutes on her second voyage in 1907.

In the illustration at the head of the page, Rangatira, the first turbo-electric vessel on the New Zealand Ferry, is seen on her trials. She was built at Barrow in 1931, and has a speed in excess of 22 knots.

For the next six years the *Maori* and *Mararoa* worked together, but it was apparent that a still larger ship was required. This came in the *Wahine*, 4,436 tons gross, built by Wm. Denny and Bros. in 1913. She was really an enlarged *Maori*, having the same type of machinery, and on trials attained a speed of 21.33 knots, which made her one of the fastest steamers in the world at that time.

The new vessel was not to remain in service long, for she was taken up for use as a dispatch vessel, and later as a minelayer in the Great War. In 1919 she returned to New Zealand and with the *Maori* maintained the service until 1931, when the



Of the two further illustrations of New Zealand Ferry vessels on this page, the lower one shows Hinemoa approaching Wellington, and the upper one is a picture of Takapuna, the 930-ton steamer that opened the service in 1889.

Rangatira was built. This vessel, a fine looking twin-screw turbo-electric steamer of 6,152 tons gross, was built by Vickers-Armstrongs at Barrow. She is 419 ft. long overall, with a beam of 58.2 ft. and a depth of 25.8 ft. Her speed on full power is in excess of 22 knots. The turbo-electric drive has proved very satisfactory because of the greater manoeuvrability it gives, as well as the availability of full power to run astern.

Up to 1941 the service was maintained by the *Rangatira* and *Wahine;* the *Maori* was kept as reserve ship and the *Mararoa* finally withdrawn and scuttled in Cook Strait. During 1941-45 both the regular vessels were frequently employed taking troops to Fiji and other South Sea Islands and the *Maori* had again to take over.

Plans for a replacement for the *Wahine* were complete in 1939, but construction had to wait until the war was over. Vickers-Armstrongs constructed this vessel, the turbine-electric *Hinemoa,* and she was launched on 30th May 1946, the first large passenger vessel to be completed in the United Kingdom after the war ended. She has a gross tonnage of 6,911 tons and was described in the *M.M.* in 1947.

The *Wahine* then became relief vessel, as the *Maori* had been laid up since 1943 and finally sold to Chinese owners. Unfortunately, the *Wahine* was wrecked in the Arafura Sea in 1951, when carrying reinforcements for the New Zealand forces in Korea.

These events left the ferry service in the sole charge of the *Rangatira* and *Hinemoa.* The former was 20 years old in 1951, and this was among the reasons why the Union Line decided to order a new turbo-electric steamer for the express service. In April of that year the order was placed with Vickers-Armstrongs for this new vessel, to be named *Maori,* thus perpetuating the name of the little steamer of 174 tons that had been No. 1 in the Union Company's fleet list, and also that of the first steamer designed and built for their Inter-Island service.

When Princess Margaret performed the launching ceremony of the vessel, it was the first time that a New Zealand-owned

vessel had been launched by Royalty. The event is marked by the appearance of a portrait of Her Royal Highness in a place of honour in one of the public rooms, with an inscribed silver plate beneath it.

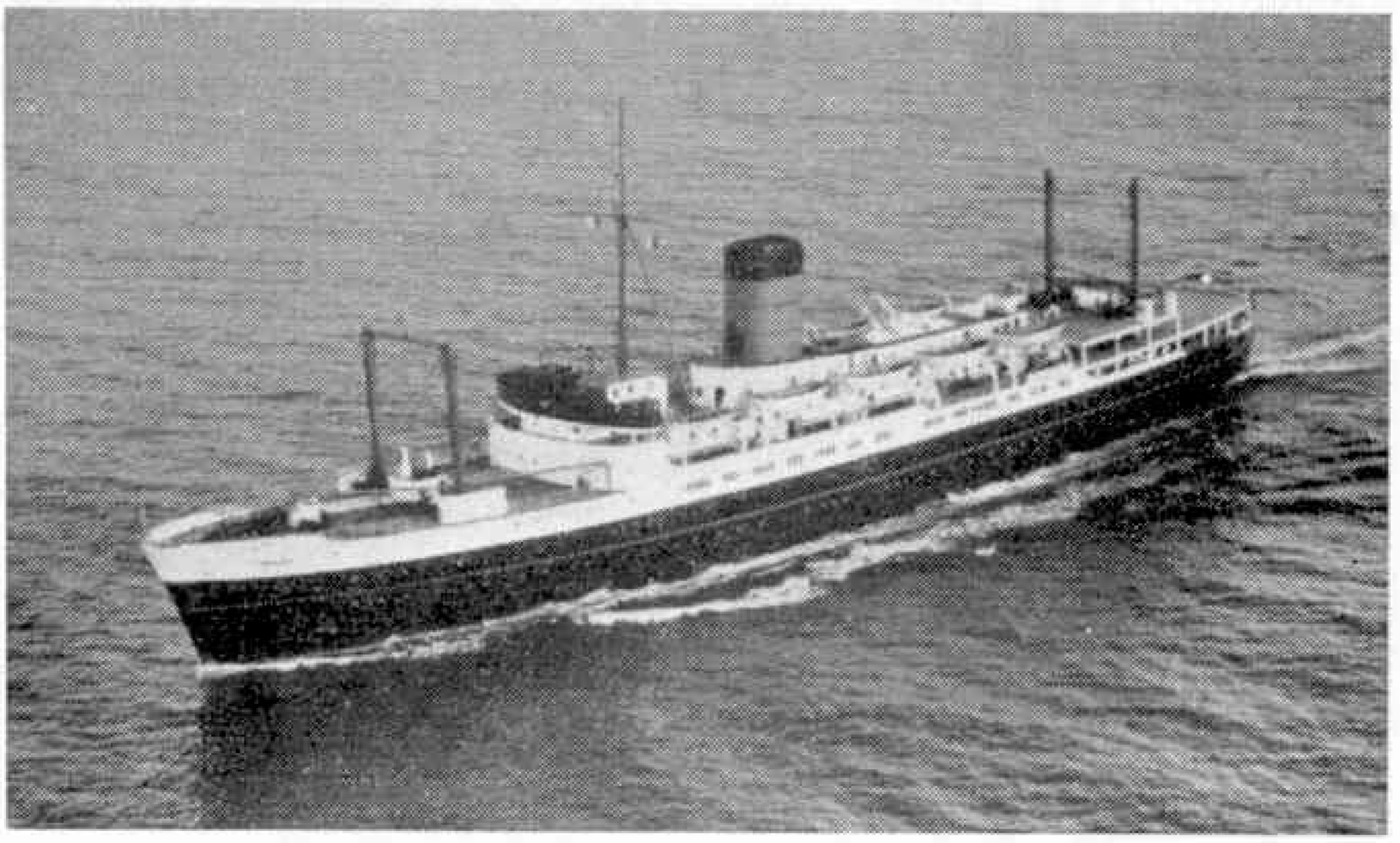
The new vessel is of 8,303 tons gross, and is 455 ft. long overall, with a breadth of 63.5 ft. and depth of 25.6 ft. She has four decks and accommodation is provided for 968 passengers and a crew of 116.

The new vessel has a pleasingly modern profile, and her passenger accommodation, which is of a very high standard, is provided on four decks, in addition to the boat deck and an orlop deck outside the machinery space. There are two de luxe cabins with private bathrooms, and many ordinary single berth cabins. Most of the accommodation is on the upper deck and main deck. Also on the latter are a small number of 12-berth cabins for use in peak periods. The cafe and smoke room are on the promenade deck and occupy the full width of the deck house. The latter is panelled, and its walnut and sycamore furniture add to its comfortable appearance.

The officers and engineers are accommodated in the boat deck house which, with the exception of a few passenger cabins, is entirely for their use. Stewards and crew are berthed in good two and four berth cabins on the main deck aft. The punkah louvre system of ventilation is installed throughout the vessel, and electric heaters are also extensively fitted.

General cargo is carried in four holds and the lower 'tween decks forward, and particular attention has been given to obtaining maximum head room and making the hatches as flush as possible for the easy handling of motor cars, horses, etc. The deck machinery is fully up-to-date, and the hatches are all served by three-ton Clarke Chapman electric winches. Mechanically-operated hatch covers are fitted, and full weather protection afforded winchmen by means of fully-enclosed cabins, with windows overlooking the hatches.

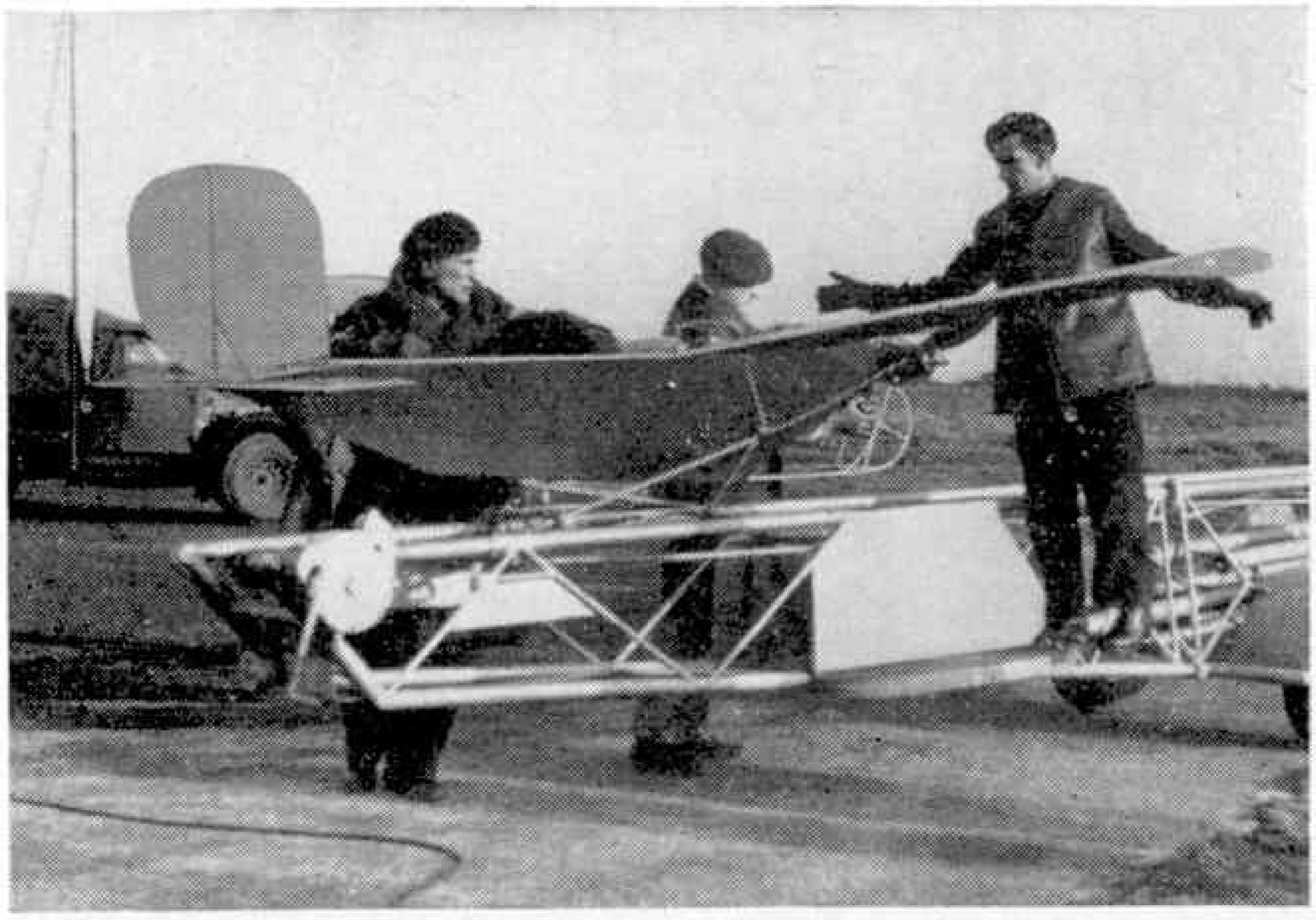
A comprehensive range of navigational aids is provided on the bridge, including one of the latest types of Decca radar. A Kelvin-Hughes echo sounder is installed, as is the Lux-Rich system of fire detection and extinguishing. As in the earlier vessels, a bow rudder is provided and telemotor gear for this is installed in each wing of the bridge, thus giving a clear view astern for the helmsman.



The latest addition to the New Zealand Ferry fleet is the Maori, the fine turbo-electric vessel seen in this illustration.

Virtually identical with that in *Hinemoa* and *Rangatira*, the propelling machinery, by the British Thomson-Houston Co. Ltd., comprises two turbo-alternator sets, each with its own condenser plant and auxiliaries, two double-unit synchronous motors directly coupled to the two screw shafts, a contactor cubicle to control the power from the alternators to the propulsion motors and two balancer booster sets for excitation. The turbo-alternator sets are rated at 5,120 kW at 3,150 volts three-phase A.C., while the propulsion motors are each of 6,500 shaft horse power at 220 r.p.m. The turbines are of the B.T-H. multi-stage impulse type and designed for a maximum boiler pressure of 425 lb. per sq. in. and total temperature of 725°F. A special wide range governor is used in order to permit a variation in speed between 3,300 and 700 r.p.m. Steam is supplied from four Yarrow high pressure water-tube boilers. The ship's maximum speed is over 21 knots.

Maori ran final trials on 10th October 1953, and was then handed over to her owners. On the following day, she left the Tyne for Wellington, via the Panama Canal and, after an excellent voyage, reached her home port on 15th November.



Starting the 6 h.p. twin cylinder engine prior to launching the Auster B3 pilotless target aircraft. Photograph by courtesy of Auster Aircraft Ltd.

Designed to be Shot at

By John W. R. Taylor

A SHORT time ago I received a letter from a friend in America, telling me about an aeroplane belonging to a gentleman named Phil Edmunds. It seems that Mr. Edmunds decided to build the world's biggest model aeroplane as publicity for the series of model kits which he manufactures. After a time, he realised that the thing was big enough for him to sit in; so he equipped it with a seat, proper controls and a 20 h.p. engine and finished up with a unique ultra-light monoplane with a wing span of 25 ft. 6 in. and speed of 70 m.p.h.

This story emphasises the narrow margin that divides model aircraft from their full-size counterparts nowadays, and which will become even more difficult to define when guided missiles like the Matador pilotless bomber and ramp-launched pilotless interceptors are in large-scale service.

All of which brings me to the subject of this article—the Auster B3 pilotless target aircraft, illustrated on this page. Simply constructed, with a wing span of 12 ft. 3 in. and powered by a 6 h.p. A.B.C. air-cooled flat-twin engine, it is no more complex than some of the superb radio-controlled models which will be seen at any big model flying meeting this summer. But I am quite sure you would get some black looks if you accused the soldiers in the picture of playing with models!

In fact, the B3 has been designed for a very serious job of work—to provide shooting practice for the anti-aircraft gunners who still play a vital part in our air defence system. Simplicity is the keynote of its construction, to keep down manufacturing costs and speed replacement of parts damaged by gunfire. The V-shaped fuselage, for example, is built of welded steel tubing and houses the fuel tank, radio control unit and the parachute by which the model is lowered safely to the ground when its engine is stopped (provided no-one has shot it down in the meantime!). A protective frame under the nose guards the engine from damage in landing, and the propeller is arranged so that it always comes to stop in the horizontal position, well clear of the ground.

The wings are wooden two-spar structures, fabric-covered except for the leading edges, and attached to the fuselage by a long retaining pin. They are interchangeable; as are the fabric-covered fin and tailplanes. No ailerons are fitted, as the rudder and elevators have proved sufficient for normal target flying.

The B3 is launched from a 37 ft. long ramp by a powerful spring catapult, and is controlled in flight by a normal control stick on the ground radio control unit. It is flown usually at up to 120 m.p.h. at a height of about 500 ft. as a target for Bren guns attached to 40 mm. Bofors guns, and is no easy target, as it can be put through aerobatics such as loops, rolls, steep turns and power dives. It carries fuel for one hour's flying.

On the Road

By J. Dewar McLintock

THANKS to the generosity of their manufacturers, I have been able to try out one or two current vehicles in the past few weeks. The Wolseley 6/80 was notable for its long, easy stride, and a degree of silence that was most refreshing after my own humble and rather husky transport! I have heard people say the 6/80 is on the slow side, but that is nonsense. People who do not use the gears to the best advantage may not get the full benefit from the camshaft engine, and perhaps that is how the myth came into being.

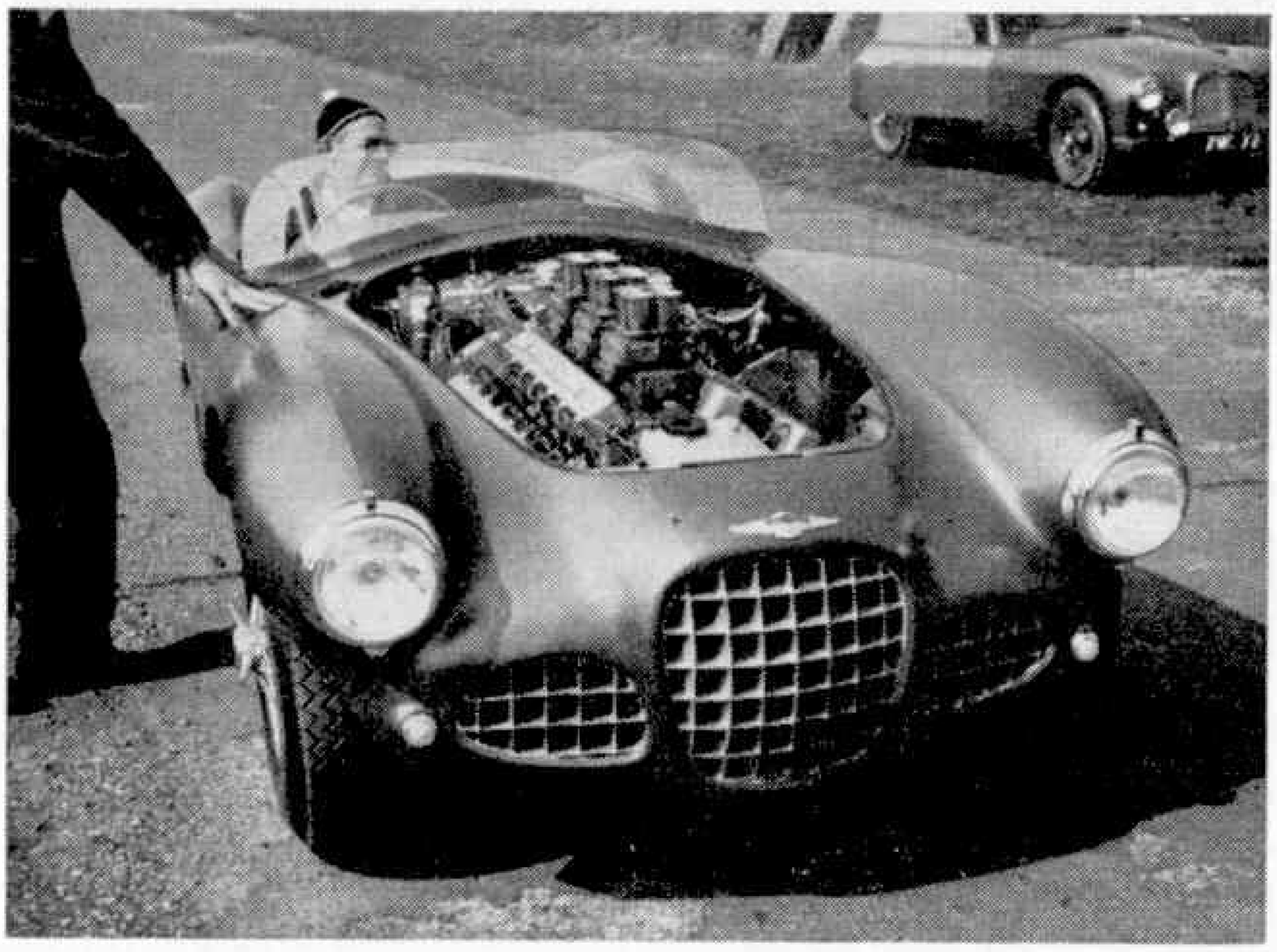
A car from the same parent organisation was the Morris Pick-Up—a semi-commercial version of the Morris-Oxford car, with an open steel truck-type body. This I found very much to my liking, and although it is true that one cannot expect "flashing" acceleration from a vehicle of this type, I found it quite easy to put 40-odd miles in the hour even at night on a road that I did not know too well.

Then I was fortunate enough to have a French car—the Simca Aronde—for a week-end. This was a delightful car, and had many typically continental characteristics. The folk across the channel build their cars to go far and fast, but never lose sight of the fact that many continental roads are very badly surfaced. Moreover, they cater for their own typical motorist, who knows two throttle positions—open and shut!—and who is apt to cram the car with people and drape it with luggage . . . Accordingly, the Simca held the road like a leech, could be cornered like a Grand Prix racer, and seemed absolutely untiring.

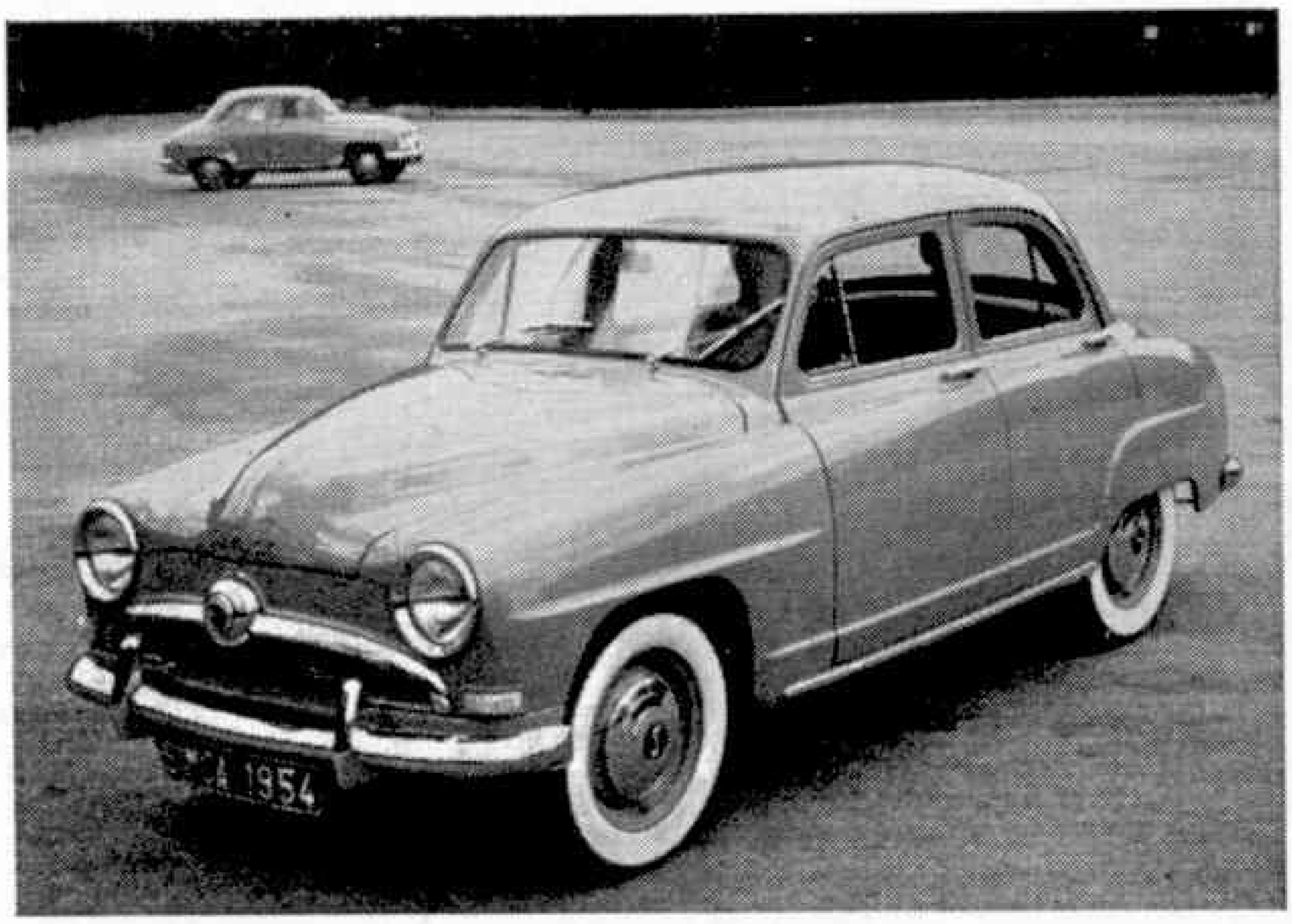
I have had a spin on a new motorcycle, too. This was the competition model Dot—a two-stroke, of course, and with the latest type of pivoted-fork suspension. I found it remarkably easy to handle, even in London traffic, and it had the kind of acceleration that allowed me to lead the massed starts from the traffic lights with every confidence! They certainly get a great deal of urge from small two-strokes these days. A friend of mine, who is highly technical, tells me that this is largely because modern methods of production allow closer limits without any danger of distortion.

However, to make a *volte face*, as it were, and talk about something that is practically hand-built—at a price!—the David Brown organisation have sent me details of the thrilling new competition car known as the David Brown Lagonda. This was to make its debut at Silverstone on 15th May, with Reg. Parnell driving it in the International Sports Car Race, and two will run at Le Mans in June.

The new car is a 4½-litre V12, but is not related to the well-known pre-war Lagonda V12. The engine is notable for the wide use of aluminium. The design is "over-square," which means that the bore is greater than the stroke, and there are four overhead camshafts, three down-draught Weber carburetters, each with



The "David Brown Lagonda," seen here with its bonnet removed to show the engine, photographed at a secret test circuit on the occasion of its first run. At the wheel is Mr. David Brown himself, who carried out the first series of test runs.



The Simca, which has perhaps a British look, but is typically French in behaviour.

four intakes, and twin ignition with two plugs per cylinder. The new Lagonda has a tubular chassis, torsion-bar suspension all-round, and inboard shoe-type brakes.

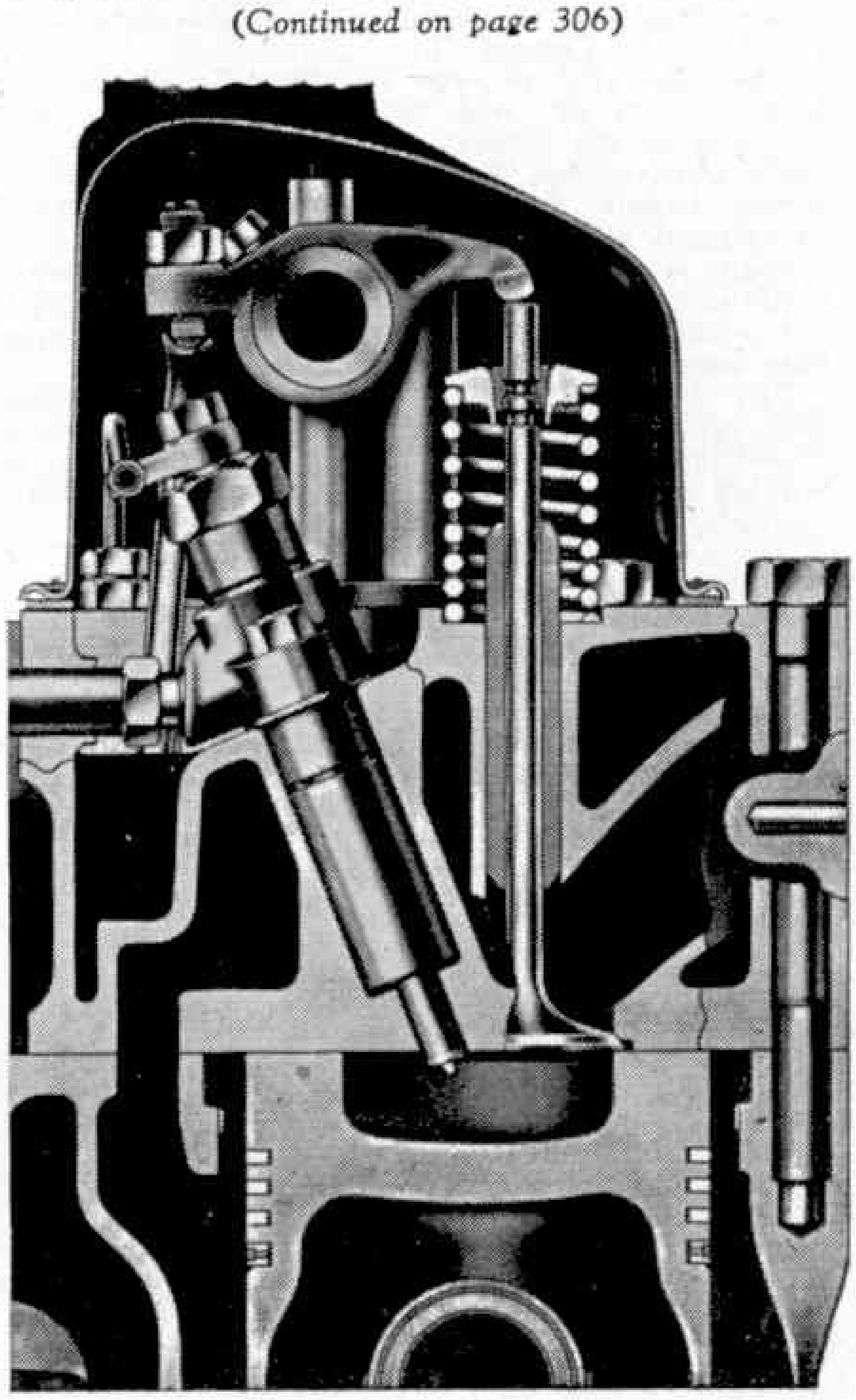
The latest thing in technically-interesting components is a magnetic clutch, I learn. This is really somewhat sensational, because it appears that the full torque of the vehicle's engine is transmitted through the agency of iron filings stuck between the driving and driven plates. This may sound like mumbo-jumbo to you or me, but it cannot be, in view of the important name of its sponsors. Clutch actuation depends upon the energising of a built-in electro-magnet, which disposes the metallic filings so as to jam-up the fine clearance 'twixt driving and driven members.

One of the illustrations on these pages shows a part cross-section of the new Ford diesel engine. This is the first 100 per cent. Ford diesel. The picture is particularly interesting in that it makes the injection layout so clear. It is direct injection under high pressure, and there is no ante-chamber for ignition.

Last Easter I indulged in one of my favourite sorties—to the Virginia Water start point of the London-Land's End Trial. I have always been fond of these M.C.C. classics, and I would have gladly taken part, but had other fish to fry. There is a certain glamour and excitement even about the start of these events, however, and for a couple of hours or more I watched the motorcyclists go off. The official starter was parked in a Jeep utility, with his entry list, brace of priceless stop-watches, etc. A headlight would blaze, an engine roar into life, and another motorcyclist would slip forward level with the Jeep, to await the "off." The starter would watch his clocks, quietly lift his programme, and wave it down again as the rider's time came up. In the instant the man and machine would be off, without fuss or fireworks, on their long, tough trip.

There were both cars and motorcycles in the event, and the various hills proved quite tough for many of them, although easy meat for others. A team of three 1926 Trojan two-stroke cars performed most nobly, but just failed to qualify for awards. One of the Trojan drivers has

(*Continued on page 306*)



An excellent example of direct injection—the new Ford four-cylinder diesel engine.

The Fairey Jet-Gyrodyne, the first British jet-rotor helicopter to fly.

Air News

By John W. R. Taylor

First British Jet Helicopter

As part of the development programme for their big 40-seat Rotodyne helicopter airbus, The Fairey Aviation Company have fitted a jet-rotor experimentally to their small Gyrodyne, illustrated above, and this aircraft is being flight tested at White Waltham Aerodrome, near Maidenhead, by Flt. Lt. John Dennis.

The Jet-Gyrodyne was the first British jet-rotor helicopter to fly, and works on much the same principle as the Rotodyne, a prototype of which is under construction. For take-off, its 500 h.p. Leonides piston engine drives compressors, which supply compressed air through the hollow rotor blades to pressure-jet "burners" at the tips. Once airborne, much of the engine power is diverted to the aircraft's two pusher propellers, offering a higher cruising speed than conventional helicopters.

The Jet-Gyrodyne is, in fact, a convertaplane. But, unlike the Rotodyne, its rotor is not designed to auto-rotate in cruising flight, as its stub-wings are not big enough to contribute any appreciable lift.

The World Airspeed Record

Last October, Lt. Cdr. James Verdin, of the U.S. Navy, set up a world speed record of 753.4 m.p.h. over a 3 km. course in a Douglas Skyray delta-wing fighter. Three weeks later, Lt. Col. F. K. Everest of the U.S.A.F. achieved an average of 755.15 m.p.h. over a 15 km. course in a North American YF-100 Super Sabre. At once, aviation people all over the world began arguing as to which of the two pilots held the absolute speed record.

If Everest's flight had been made over a 3 km. course there would have been no doubt, as the official rules of the Federation Aeronautique Internationale accept a new speed record only if it exceeds the previous record by one per cent., and Everest did not beat Verdin's record by that amount. But he made his flight over a different distance; and many experts argued that, as a result, it was only logical to accept the higher speed as the absolute record. After three months of consideration the F.A.I. have agreed, and Col. Everest is now officially holder of the world's absolute speed record—the fourth time this record has been held by North American fighters since September 1948.

Convair's Biggest Flying Boat

America's first turboprop transport flying boat, the slim-hulled, 80-ton Convair R3Y-1 Tradewind, has completed successfully its initial flight trials over San Diego Bay, California. Designed to fly long distances at more than 350 m.p.h., it is powered by four 5,500 h.p. Allison T-40 turboprops, each consisting of two turbines geared to drive a set of contra-rotating propellers. Its wing span is 145 ft.

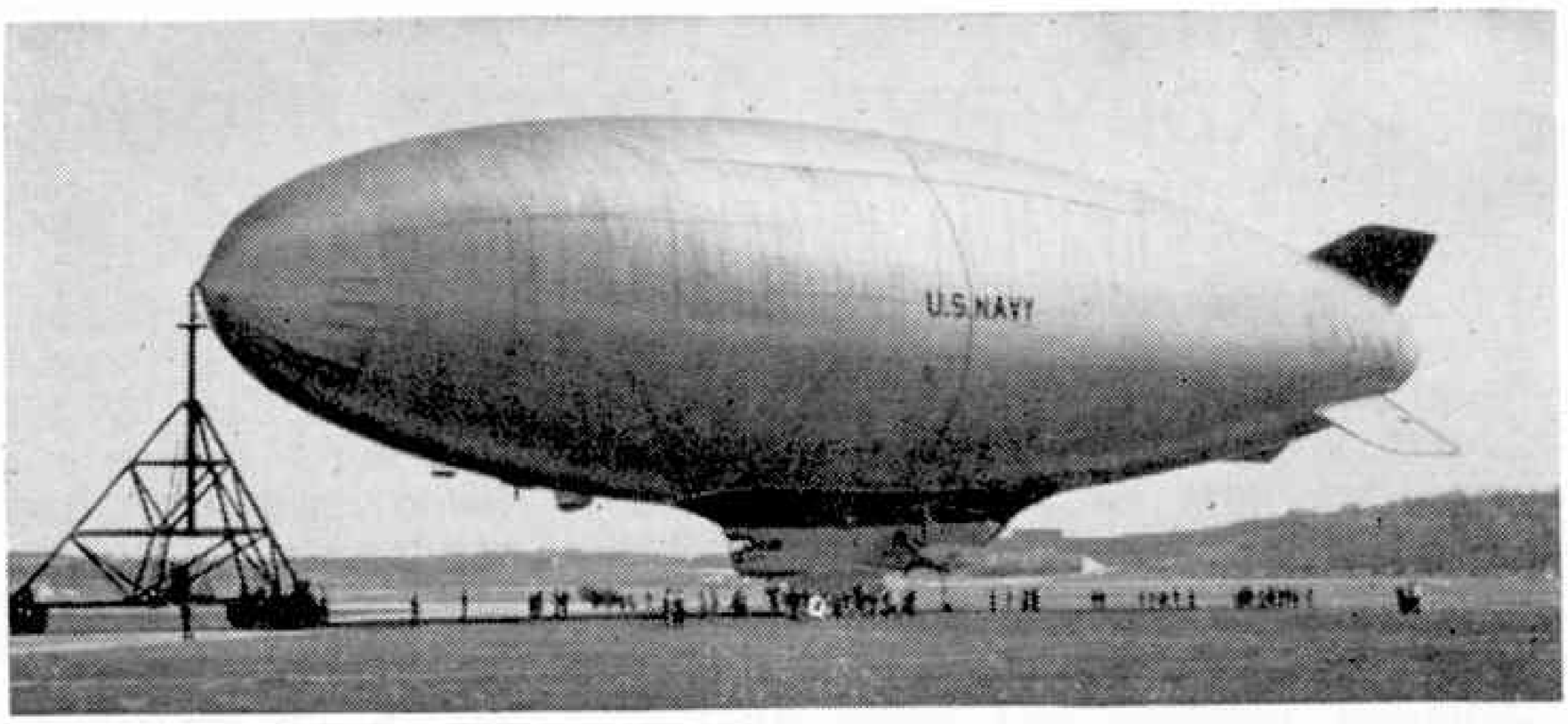
A large number of Tradewinds have been ordered for the U.S. Navy's Fleet Logistics Air Wings, whose job is to fly personnel, supplies and equipment to American Naval units and bases all over the world; and they will be the most advanced big flying boats in the air. Their long, slender hulls, with a length-to-beam ratio of 10-to-1, are extremely efficient both in the air and on the water. Large cargo hatches, built at the same height above the water as floating docks, will speed loading and unloading of cargo, and, when used as passenger transports, the aircraft will have rearward-facing seats.

In fact, with the Convair Sea Dart water-based fighter, the Tradewind provides further proof that unless the Air Ministry changes its policy soon we shall lose our traditional leadership in flying boat design—if indeed we have not already done so.

Supersonic Prince

First member of a Royal Family to fly faster-than-sound was Prince Bernhard of the Netherlands, who went supersonic twice in a two-seat TF-86F Sabre trainer on the 13th March last, once as a passenger and once as pilot.

The 80-ton Convair R3Y-1 Tradewind transport, America's first turboprop flying boat, taking off for its maiden flight.



U.S. Navy's Goodyear ZP2N-1 airship, built by the Goodyear Aircraft Corporation, of Akron, Ohio.

New Airships

As a result of their fine service in World War II, the U.S. Navy retains a keen interest in the use of non-rigid airships (blimps) for locating and attacking enemy submarines, and the upper illustration on this page shows the latest and biggest aircraft of this type yet built.

Known as the ZP2N-1, it is one of a number of Type "K" and "N" blimps being produced by the Goodyear Corporation at Akron, Ohio. Its length is 342 ft. and its envelope contains 975,000 cu. ft. of helium gas. Powered by two 800 h.p. Wright Cyclone engines, it is able to fly for many hours at up to 85 m.p.h., and carries the latest radar search equipment, including a large scanner under its two-deck control car.

Map with a Memory

The Decca Navigator Company have produced a new air navigation aid, weighing only 20 lb., which incorporates a "memory." Basically the instrument is similar to the famous Decca Air Log used by B.E.A., in which the aircraft's track is traced automatically on a moving strip map. This time, however, the map is stationery and a mechanical pen draws the track on it. Should the aircraft go outside the area shown on the map, the navigating system "memorises" its movements and picks it up the moment it enters the map field again. Because of its lightness, the new aid would seem to be of particular value to the pilots of high-speed jet fighters.

Royal Navy's Anti-Submarine Helicopters

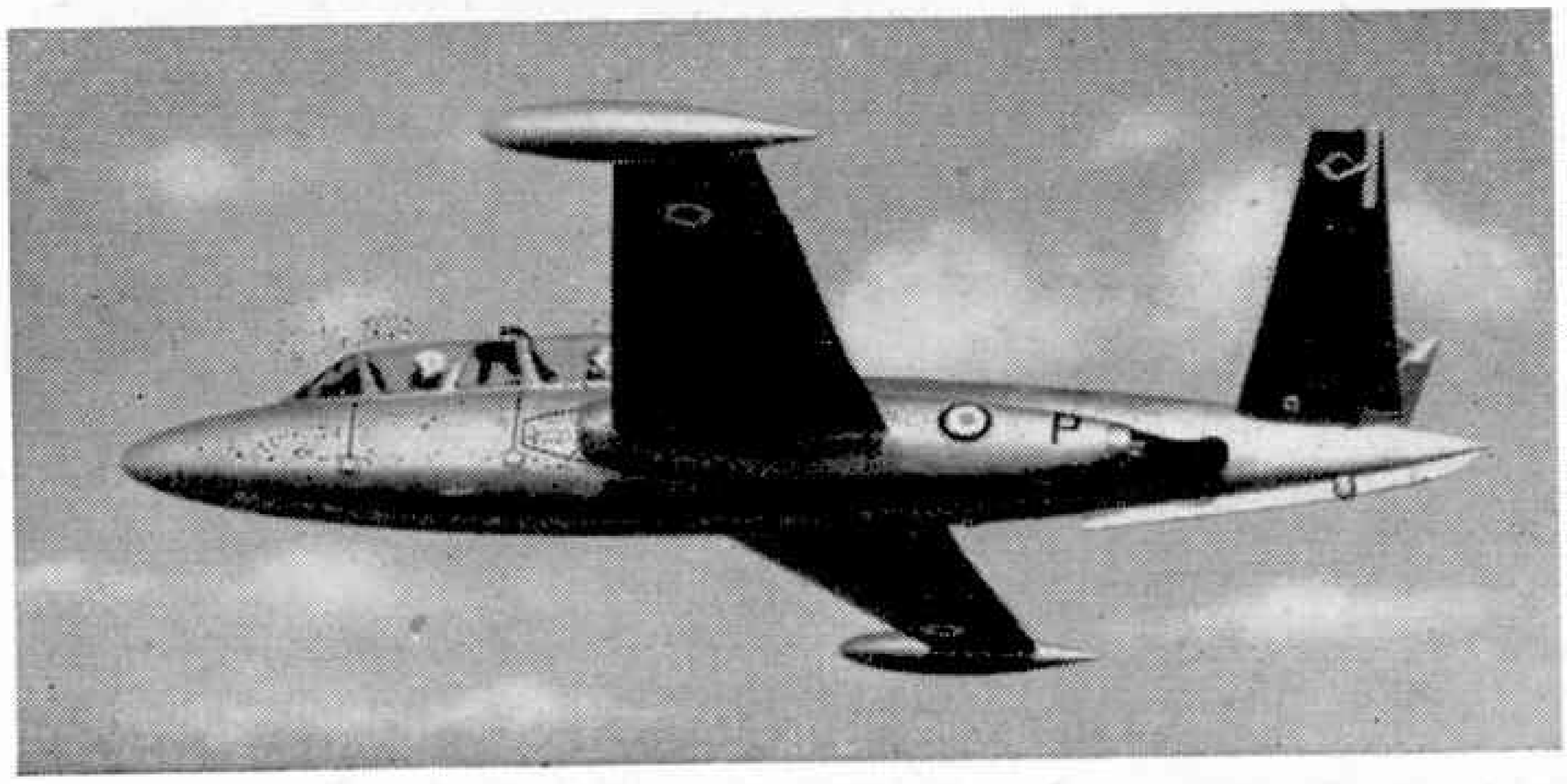
After six months of experiment and training, the Royal Navy's first anti-submarine helicopter squadron —No. 845, equipped with American-built Sikorsky S-55s—became operational on 15th March last, and is destined for service in Malta.

Main advantages of using helicopters for anti-submarine work are that they can operate from small platforms on almost any type of ship, and can hover low over the water, listening for submarines with their "dipping Asdic" apparatus, which is, in effect, a microphone lowered into the water at the end of a cable. Chief disadvantages are comparatively low speed, and vulnerability, if the submarine decides to fight it out; but these problems may be overcome in due course. Meanwhile, the Royal Navy has ordered a substantial number of twin-engined Bristol 173s, to gain further experience in operating large helicopters for anti-submarine duties.

Jet Trainers for French Air Force

First jet basic trainer to go into large-scale production is the neat little Fouga Magister, on which pupil pilots of the French Air Force will one day gain their wings, instead of spending a long period on piston-engined "primaries."

Powered by two 880 lb. thrust Marboré turbojets, the two-seat Magister has a top speed of 440 m.p.h. and is extremely manœuvrable. One of the prototypes has already logged 250 flights in 220 flying hours, and reached a height of 40,000 ft. during test flights to perfect the engine installation. Another, shown in the lower picture on this page, has been brought up to production standard,



The Fouga Magister is the first jet basic trainer to go into large-scale production, and will be used by the French Air Force.

with wing tip fuel tanks, machine-guns, gunsight and other operational equipment, in which form it has made more than 50 flights. Altogether, some 60 pilots have flown these two machines, including members of American, Dutch, British, Italian and German technical missions.

Lazy Dog

One of the U.S.A.F.'s newest weapons is "Lazy Dog," a piece of steel 1⅜ in. long, weighing about half an ounce and shaped like a tiny bomb, with tail fins to control its flight. Shovelled by the thousand from aircraft flying at 5,000 ft., these "Lazy Dogs" are said to have the penetrating power of a revolver bullet, and to be able to put non-armoured vehicles out of action.

* * * *

Latest orders for the Vickers Viscount turboprop air liner include three for the Egyptian Misrair Co. and two for Fred Olsen Airtransport of Norway.

Railways Among Mountains

By the Editor

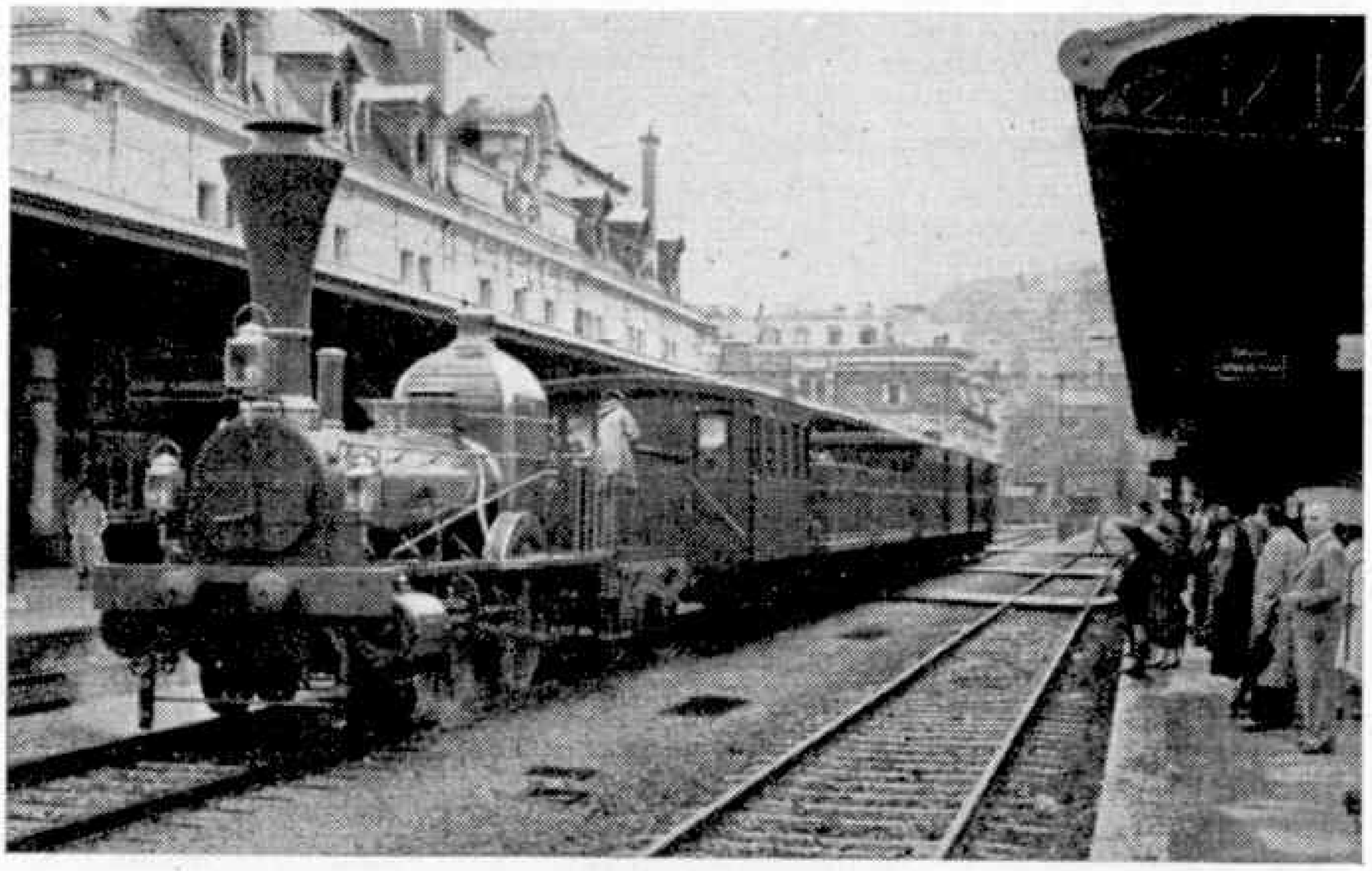
IT is difficult to imagine anything more fascinating to a railway enthusiast than a full account of the railways of Switzerland. The country itself is wonderful, with its amazing mountains, glaciers and lakes, but these attractions make it difficult to organise a system of modern transport. They have been accepted as a challenge by Swiss railway engineers, however, and today there are steam and electric lines in an almost bewildering variety of gauges, the longest and most amazing tunnels in the world, and railways that actually climb mountains. Fantastic schemes have even been made to build a line to carry passengers to the summit of the Matterhorn. It is very unlikely that any of these will ever be put into practice, but it is clear that nothing is regarded as impossible by the railway engineers of Switzerland.

I cannot think of anyone better qualified to tell the story of the railways of Switzerland than Cecil J. Allen, who has travelled over them and has studied their working with the keenest interest during more than 40 years. He has now placed all railway enthusiasts under a debt of gratitude by writing a magnificent book* that brilliantly describes the daring, hard work and skill that have gone into the creation of the wonderful network of railways among the mountains for which Switzerland is deservedly famous.

Special mention must be made of the book's magnificent illustrations. These comprise nearly 200 splendid pictures in half-tone, beautifully printed on a new fluorescent art paper so that they present vivid representations of the amazing railway scenes dealt with. It is claimed indeed that the illustrations form probably the most complete pictorial survey of Swiss railways that has ever been published, and the volume is well worth getting for the sheer pleasure and interest of the selection that Mr. Allen has made.

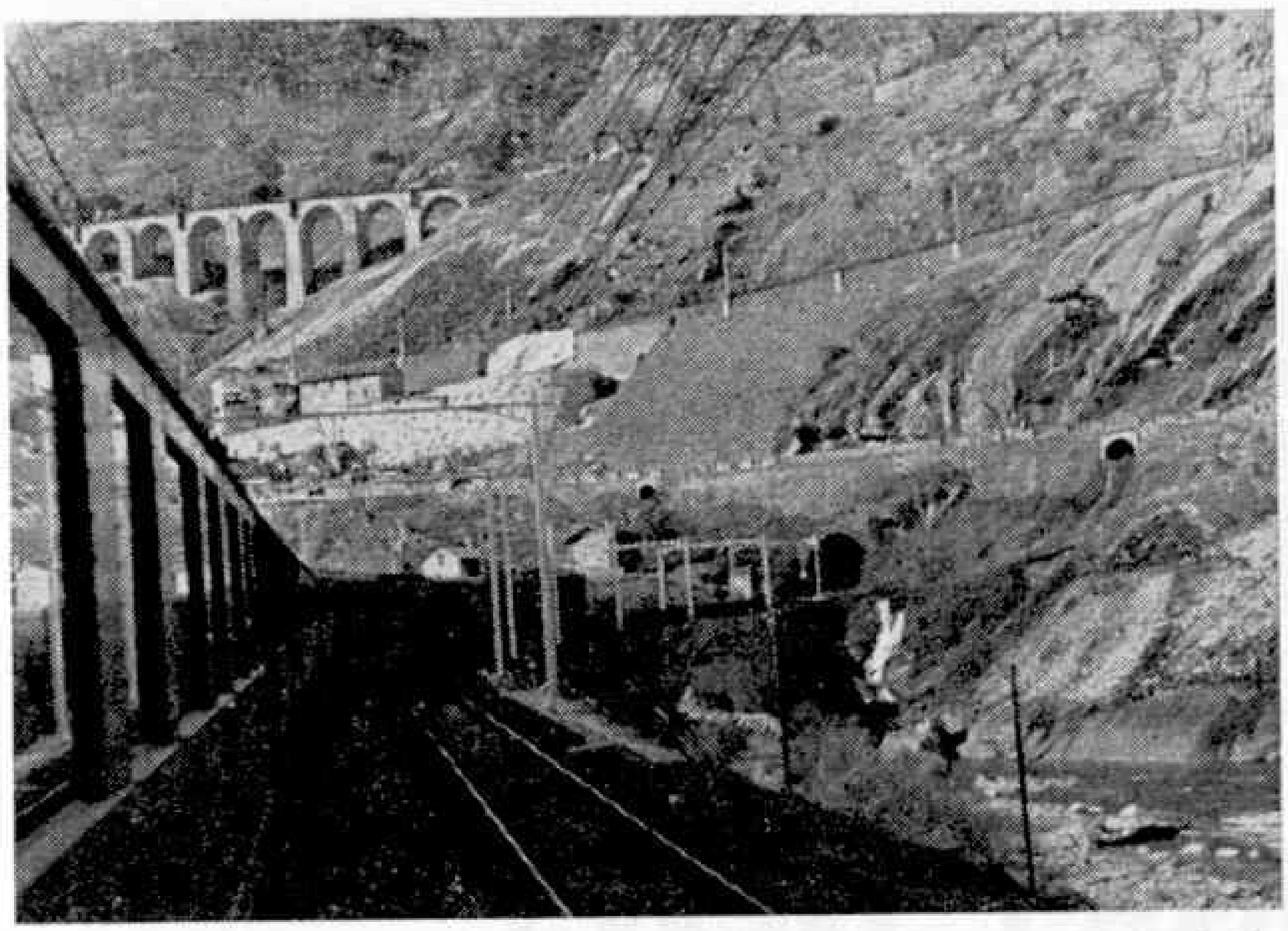
Three of these illustrations are reproduced on these pages, and they will serve as pointers to the immense range of railway topics covered by the author. The one on this page is a historic picture, showing the first engine on the first Swiss railway, which was opened for traffic almost 107 years ago, at the head of a replica train when the centenary of the railway was celebrated. This was not a mountain line. It connected Zurich with Baden, in the north of Switzerland, and very quickly received the nickname of the Spanish Bun Railway. The reason for this was that what were called Spanish buns made in Baden were highly esteemed by the citizens of Zurich, who were delighted to find that they could obtain deliveries of these delicacies more quickly by rail than they had previously done by road!

The second of the three illustrations introduces a railway of superb engineering



The first locomotive to run in Switzerland, at the head of a replica of the first train, which ran from Zurich to Baden in 1847. The illustrations on these pages are reproduced from "Switzerland's Amazing Railways," by Cecil J. Allen.

* *Switzerland's Amazing Railways* by Cecil J. Allen (Thomas Nelson and Sons Ltd., 25/- net).



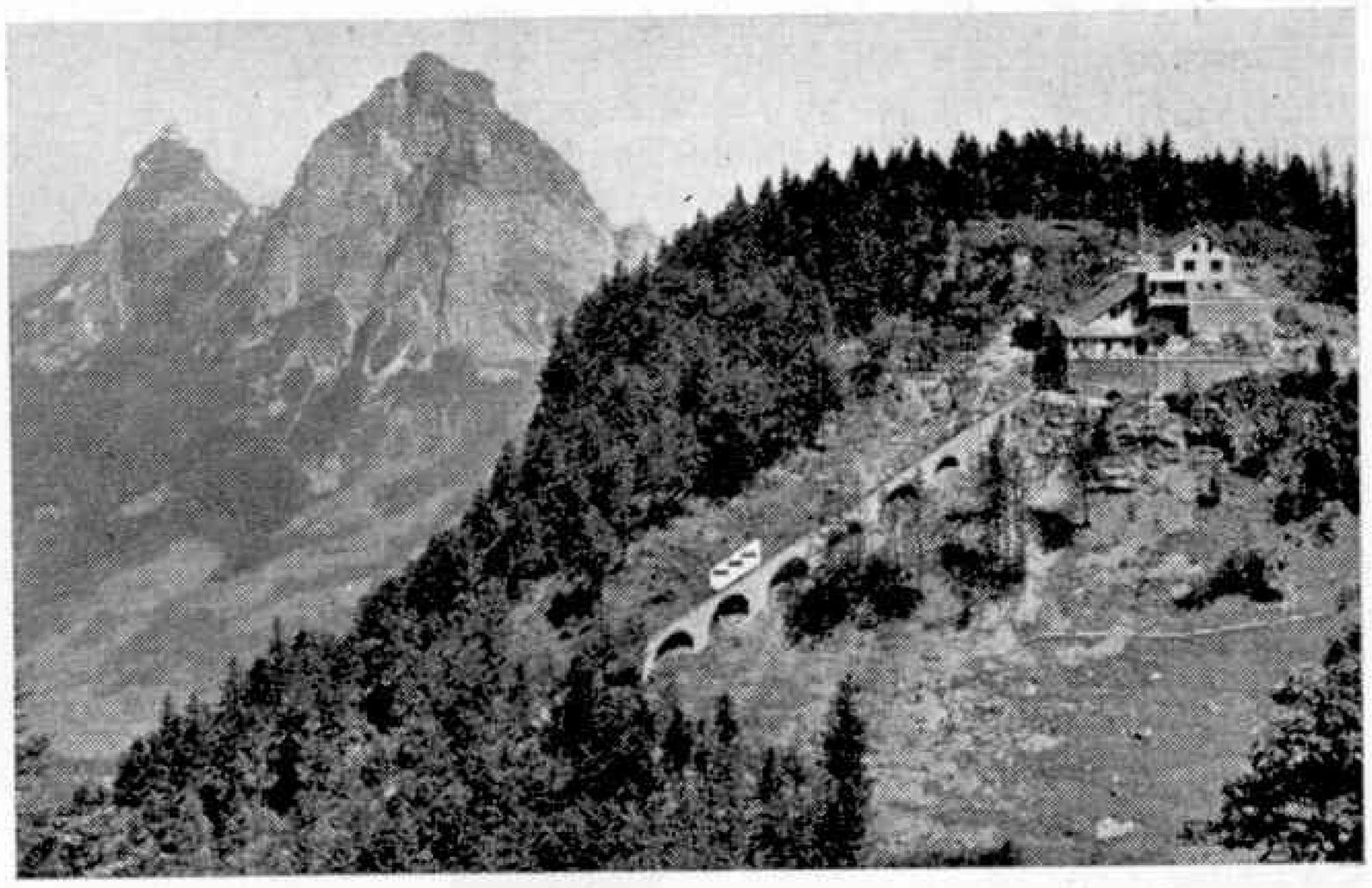
The spirals at Giornico, on the Gotthard Railway. All three levels of the line near here are seen in this view, and the exit from one of the spiral tunnels is also visible.

and scenic attractions in the mountainous region. This is the Gotthard line, the construction of which involved boring the Gotthard Tunnel, exceeded in length only by the twin bores of the Simplon and by the Appenine Tunnel in Italy, and the creation of a whole series of the wonderful spiral tunnels now used so freely to overcome the gradient difficulties that travel through mountainous regions presents. One of the most famous of these series of spiral tunnels is at Giornico, on the Gotthard line south of the tunnel, and in my illustration three different levels of the line can be seen at once.

The Gotthard line and others like it in Switzerland, all of which you can read about in Mr. Allen's book, are triumphs of what might be called normal railway building. The Swiss railway engineers were not content to push their railways under mountains and over passes, however. They began to build lines climbing the mountain peaks themselves, using the rack and pinion system or the funicular principle. Our third picture illustrates one of these mountain lines, the Schattli-Stoos funicular, the little car of which is seen on the last stretch of its climb into Stoos, with the twin peaks of the Mythen in the background. Here the line is steeper than 1 in 2, and the car climbs through a height of 2,306 ft. in a journey of less than a mile that occupies about 11 minutes.

Even this is not the end of the climbing possible to the visitor, for not far away is an example of another creation of Swiss engineers, a chair lift by which passengers are carried upwards another 1,463 ft. This form of mountain transport cannot perhaps be classed as a railway, for it has no rails, the coaches consisting of cages suspended from wheel carriages that move up and down steel cables suspended from pylons. Many of the chair lifts are now very elaborate, with ingenious junction stations and of extraordinary length for such a breathtaking form of transport.

From the Spanish Bun Railway to the latest triumph of the Swiss railway engineer, Mr. Allen takes his readers through an amazing story of development in a book that will appeal to all who have any interest at all in Switzerland.



The final climb on the funicular railway from Schattli to Stoos.

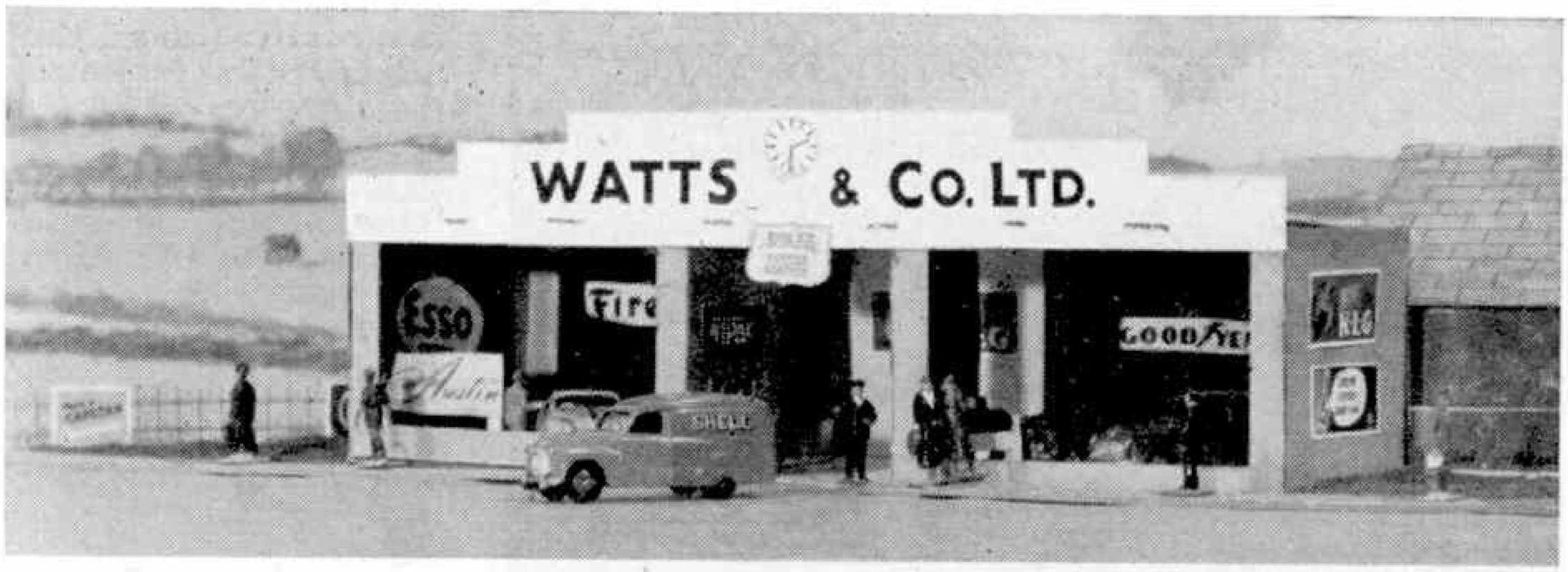


Fig. 1. The Dinky Toys Austin A40 Van "Shell-B.P." leaving a motor showroom. Strips of cardboard, magazine cuttings and a few Dinky Toys cars and figures are all that are needed to make a realistic scene of this kind.

DINKY NEWS

By **THE TOYMAN**

THE Dinky Toys announcement page in the May *M.M.* carried the good news that two more models were to be added to the range. These are Dinky Toys No. 470 Austin Van "Shell-B.P." and Dinky Toys No. 622, 10-ton Army Truck. By now most keen collectors will have seen these models in their local Dealers' windows and many will have added them to their collections, but for the benefit of those who may not have had the opportunity so far to examine the latest models at close hand I am giving a few details of their distinctive features and their uses in Dinky Toys games.

I will deal with the Austin A40 Van first, as it is some time since a new commercial vehicle of this kind was introduced. It is shown in the illustration below, and the actual vehicle on which it is based is one of the most popular of the many light vans to be seen on the roads to-day, as it is used for distributive and delivery work in many different trades and industries. The Dinky Toy model carries "Shell" and "B. P." transfers on its sides and rear, and is attractively enamelled in a two-colour scheme, using the correct shades of red and green in which the actual vehicles are finished. The illustration shows clearly the finely detailed moulding of the radiator and front bumper bar, features that give a most realistic appearance to the model.

The Austin Van is particularly suitable for inclusion in street layout schemes, and this fact is splendidly demonstrated in the motor showroom scene illustrated at the top of this page. This very effective corner of a layout was made up very easily from a few pieces of cardboard, some cuttings from magazine advertisements and a few miniature figures. The motor showroom itself is built up from strips of thin cardboard glued together, and the pavements are also cardboard. Dinky

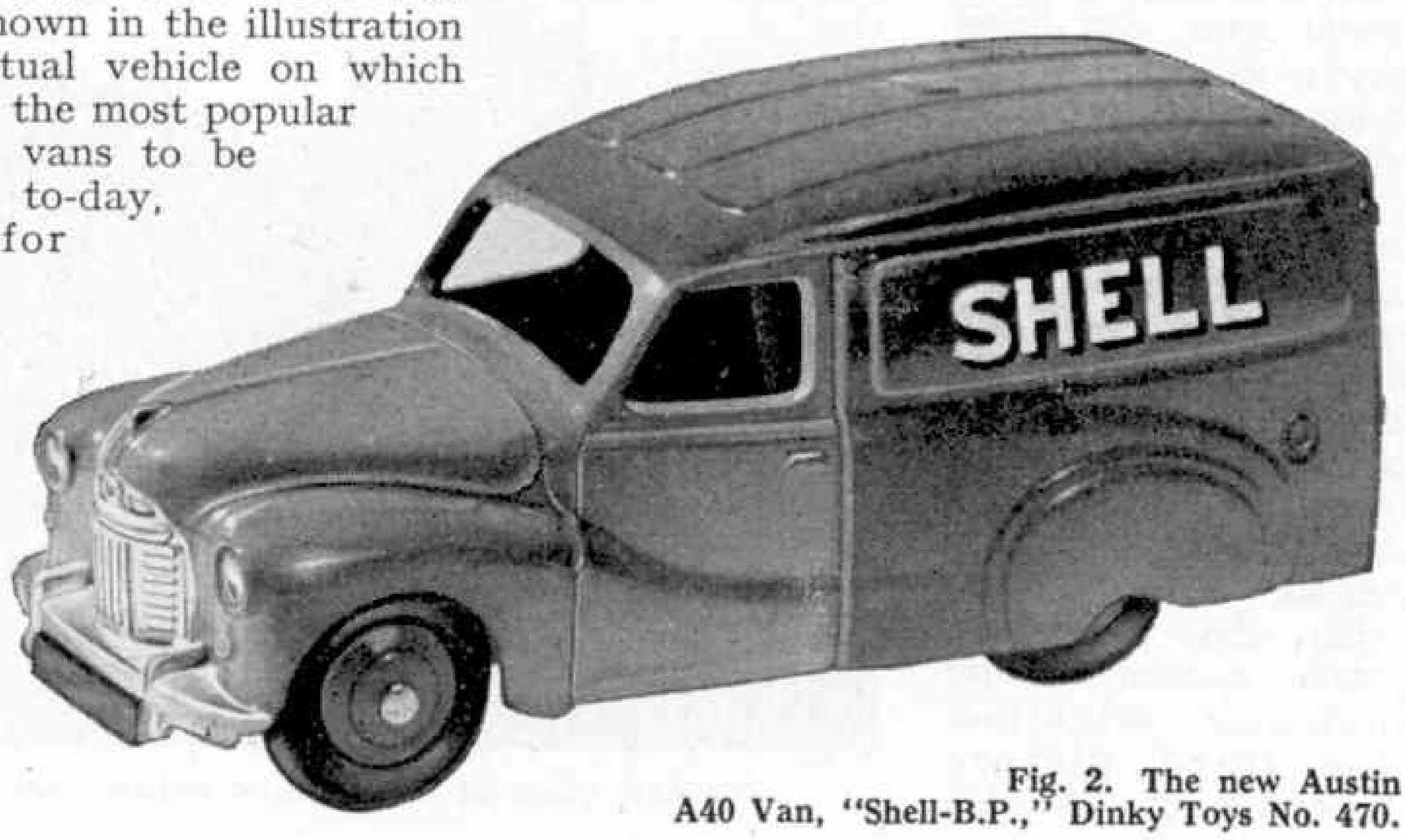


Fig. 2. The new Austin A40 Van, "Shell-B.P.," Dinky Toys No. 470.

Toys Morris Oxford, Austin Somerset and Austin Atlantic cars are displayed in the windows, and a clock over the entrance gives a final touch of "life" to the scene.

The 10-ton Army Truck is another addition to the series of Dinky Toys Army vehicles, and just how realistic the latest model is can be seen from the lower picture on this page. Finished in the correct green, with Royal Armoured Corp transfers at the front and rear, the new Truck makes a fine companion for the Army models already available. A spare wheel is carried between the cab and the body.

The die-cast body is fitted with seats for use when the Truck serves as a personnel carrier, and of course the usual cover is provided over the body. This cover is detachable, however, and when this is removed the Truck makes an excellent carrier for heavy goods and equipment. It is used in this way in the attractive layout shown in Fig. 3, where it is seen in front of a vehicles workshop. The 10-ton Truck has arrived with a load of replacement engines for the vehicles in the workshop, and one of the crates has just been lifted clear of the Truck by a small hoist. You will notice how effectively a simple scene of this kind can be arranged with the models now available. The accessories needed are quite simple, and they can be made very easily from a few scraps of wood and cardboard. If you have a favourite scene making use of the Army models, try to obtain a photograph of it and send it along. I shall be very glad to see it, and if the picture is suitable I may be able to use it in the *M.M.*

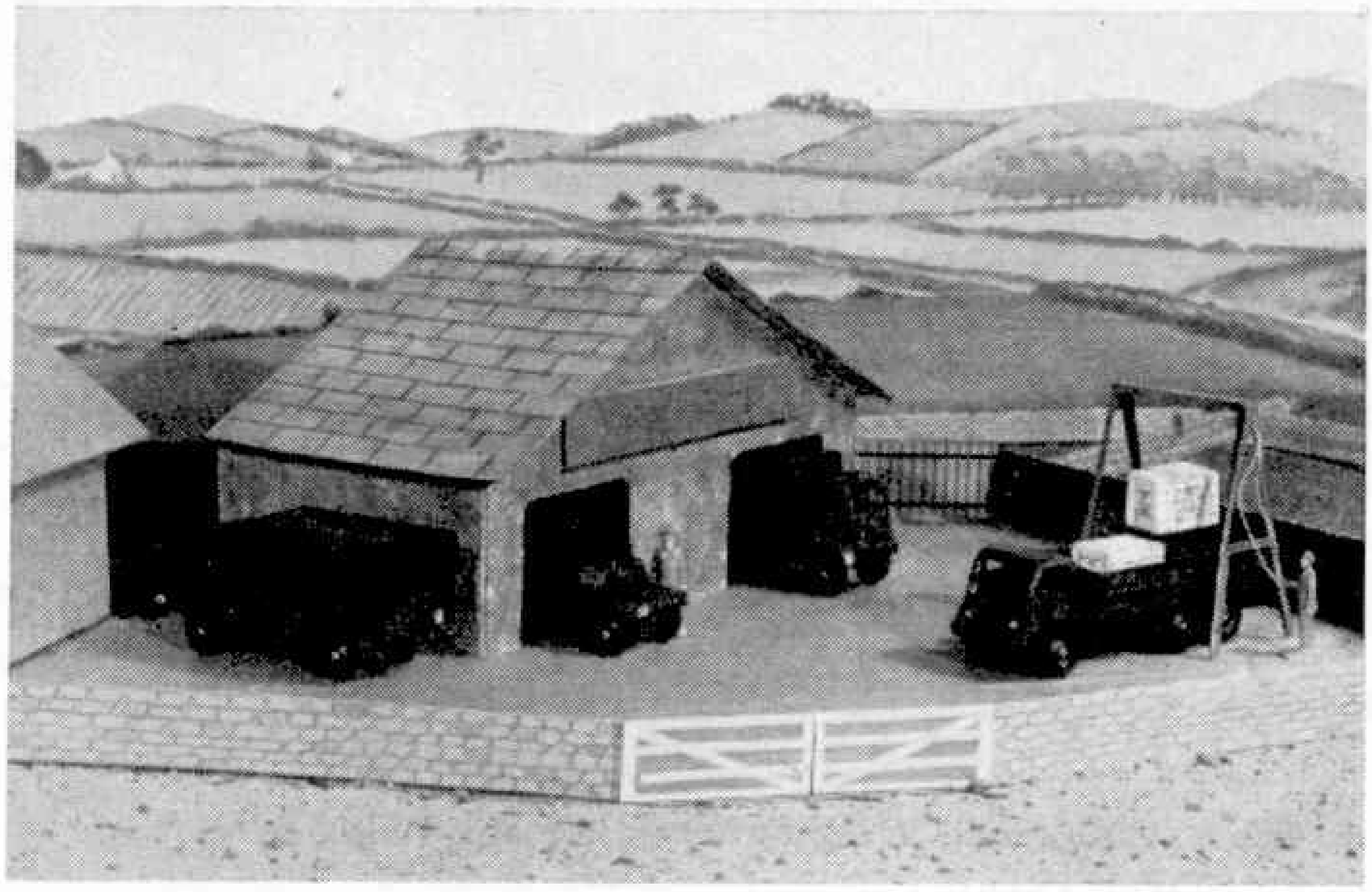


Fig. 3. In this scene the 10-ton Army Truck is shown unloading spares at an Army vehicles workshop. For this kind of work the cover of the Truck can be removed.

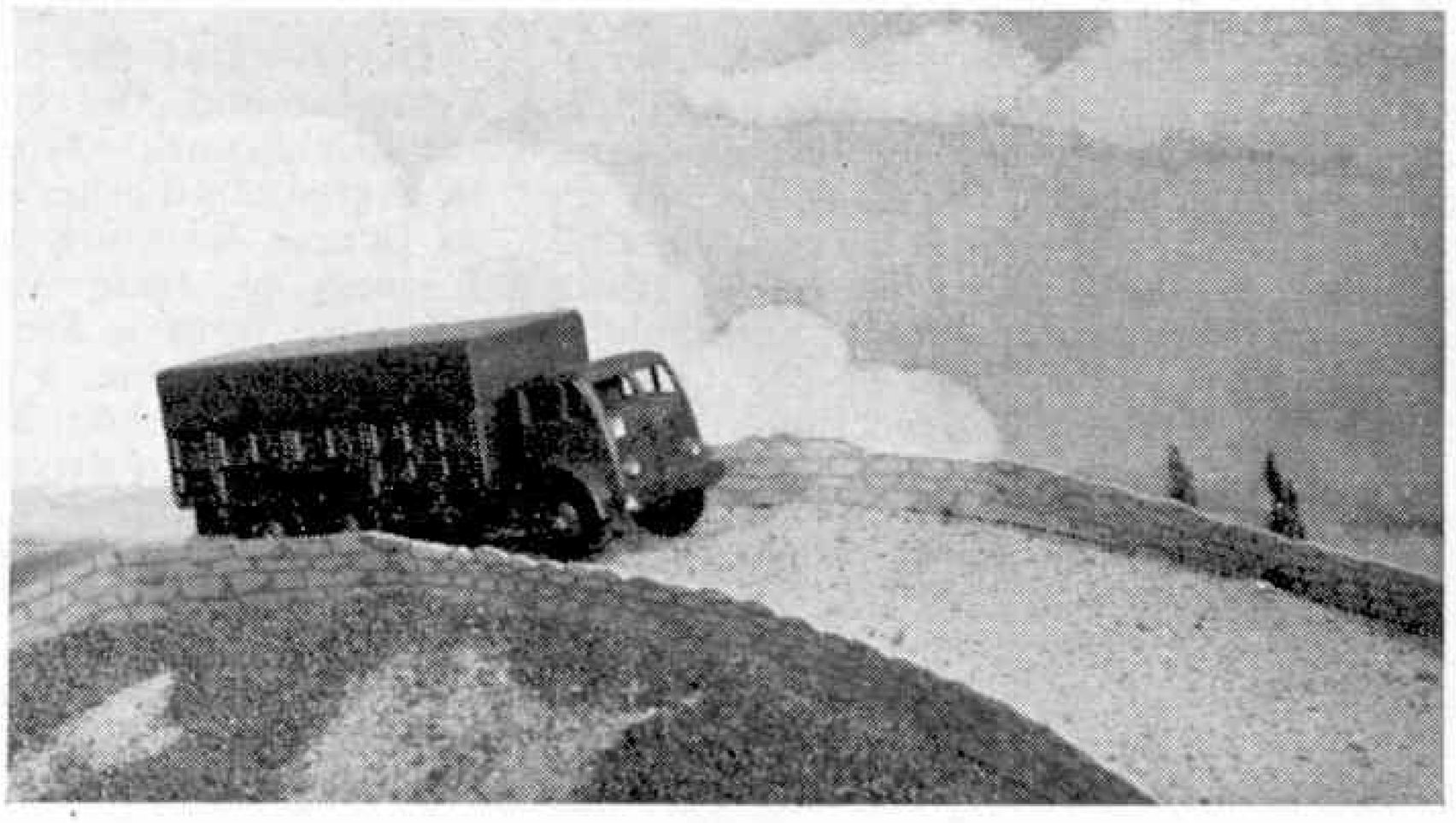
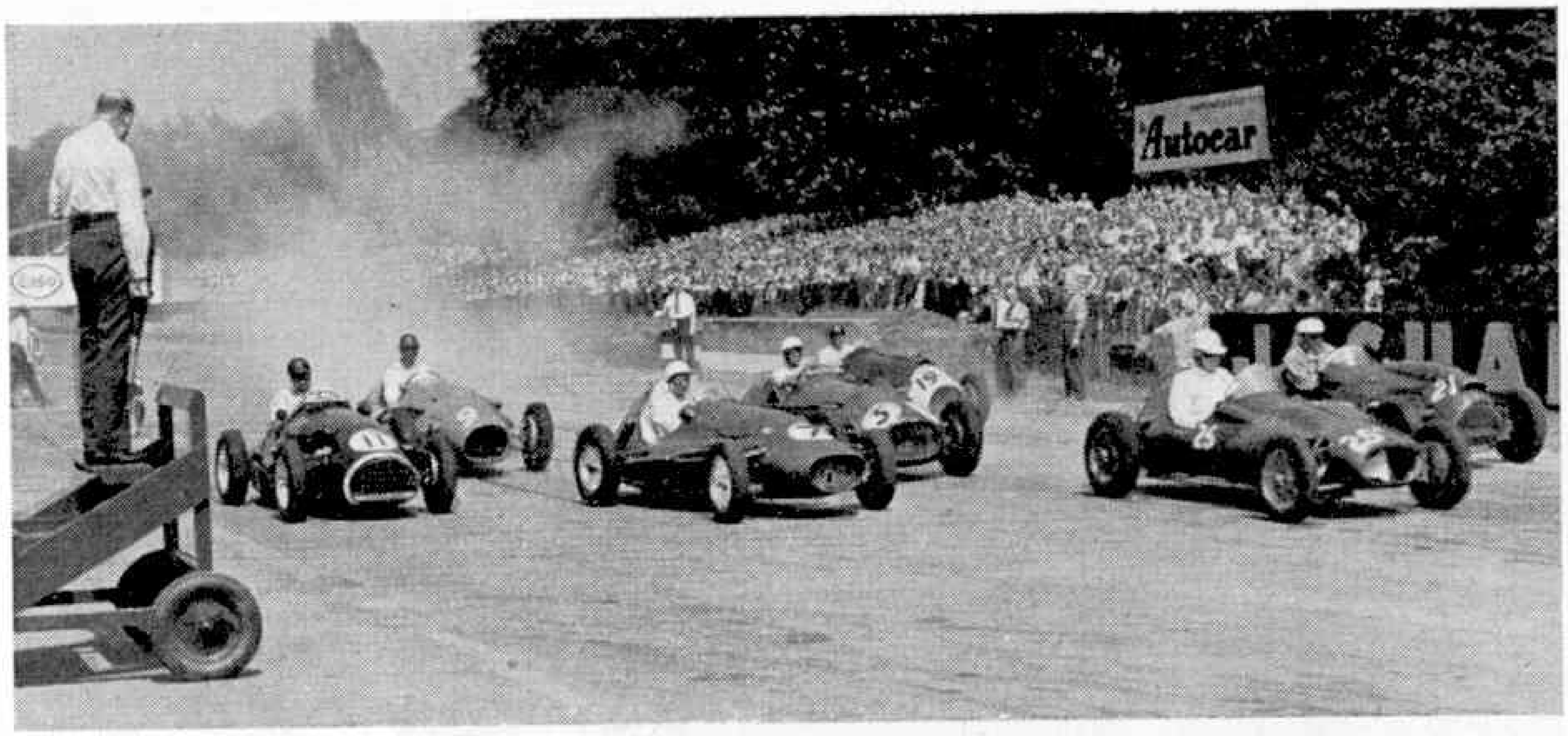


Fig. 4. The 10-Ton Army Truck, Dinky Toys No. 622, breasting a hill, makes a strikingly realistic picture.



Behind the Scenes

The Back Room Boys of Motor Racing

By Peter Lewis

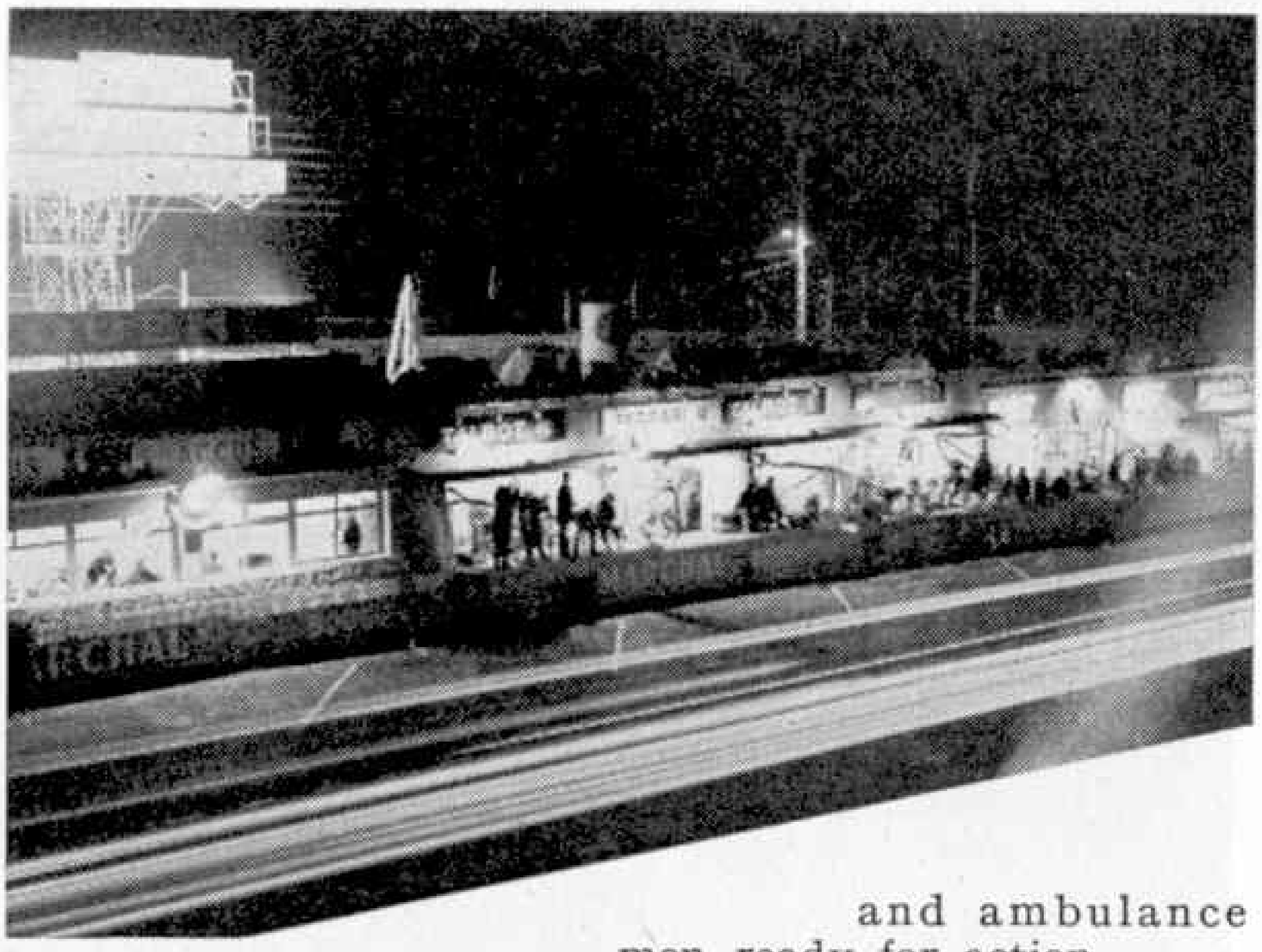
HOW many people, when they visit Goodwood, Silverstone, Crystal Palace or one of the many other motor-racing circuits, give a thought to the Back-Room Boys of the sport, those enthusiasts who work so tirelessly behind the scenes?

Some of the most important of these background men are the scrutineers appointed by the R.A.C. It is their job to examine every car and to ensure that only those in perfect mechanical condition reach the starting grid. The scrutineer must examine steering, wheels and hubs, the entire brake system, suspension and shock absorbers. He checks for oil leaks—vitally important, for oil on the track can prove disastrous. Tyres too must be in first-class condition and the Chief Scrutineer usually has a tyre consultant to assist him. He also has to check R.A.C. Competition Licences and ordinary driving licences, as well as crash helmets, goggles and vizors, and finally he certifies to the Clerk of the Course, before the start of the meeting, that all cars are race-worthy and that drivers have submitted satisfactory medical certificates. In the event of an accident he must be able to satisfy the Stewards of the Meeting that the car concerned was in no way defective.

On the morning of race day there is usually some last minute practising, and invariably much hard work on cars in the pits, so called because years ago they really were pits—dug at the side of the course. Out on the circuit, while the crowds settle down behind the barriers, Course Marshals, Observers and officials of the Emergency Service take up their positions. The Course Marshals must prevent unauthorised persons from getting on to the track, be prepared to render assistance in an emergency and control the crowds. Course Telephone Marshals are in direct contact with the Incident Officer in the Clerk of the Course's Office at the Start Line, the nerve centre of the circuit.

The starter has just released the field in a race at Crystal Palace. No. 11 is Tony Rolt's Connaught, and No. 7 Stirling Moss's Cooper - Alta. Photograph by courtesy of the Autocar.

Observers at the dozen or so Observer Posts around the circuit have a most responsible task. They are key men and in charge of all other race personnel—such as Course Marshals, ambulance men and firemen—in their area. Each Post is equipped with a fire extinguisher, sand, shovel and broom, a set of coloured flags and a report book. The flags are used to communicate to drivers the International Flag Signals, and Observers must be thoroughly conversant with their use. They have the authority to slow down a car (yellow flag), and must assess the situation and the possible danger at a moment's notice, but at the same time avoid hasty action. The flag that is most



A night scene at Le Mans, with the pits full of activity. Behind is a section of the giant illuminated scoreboard. The illustrations on this page are reproduced by courtesy of The Autocar.

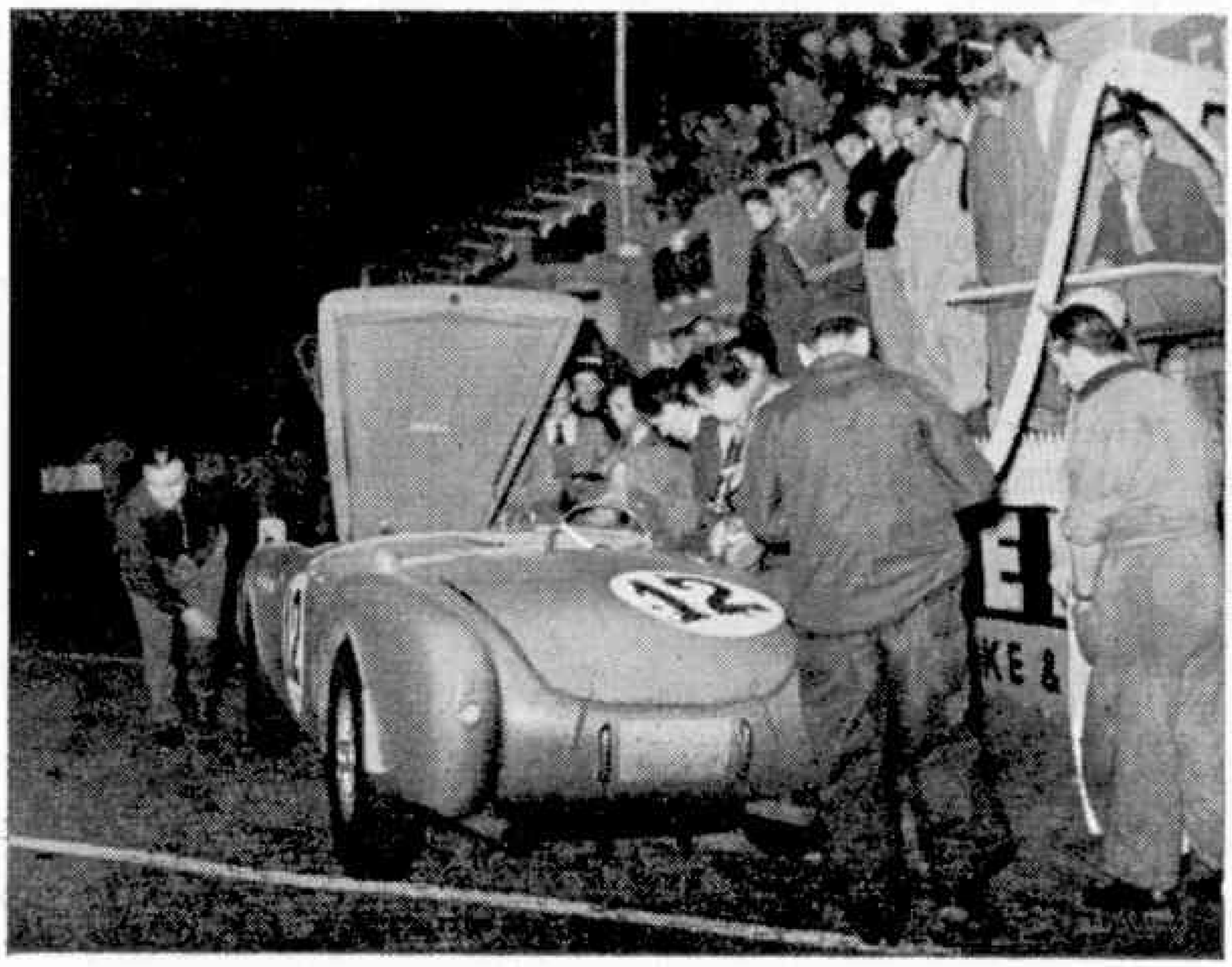
frequently used is a blue one (waved) which means "Another competitor is trying to overtake you." Although I have never seen a blue flag waved in error at world-champion Ascari, I believe it has been done—but not in this country!

The Observers report any cases of careless or dangerous driving such as baulking or inopportune overtaking and, for instance, a driver running on to the grass verge when not forced by an emergency to do so. They also report retirements and are in contact by telephone with the Chief Observer, who is with the Incident Officer at the Clerk of the Course's Office.

The Emergency Service comprises the Incident Officer, Incident Observers, Emergency Observers, doctors, ambulances, service vans, Course Telephone Marshals and fire appliances. The Chief Medical Officer normally remains in the vicinity of the Clerk of the Course's Office, with the Chief of Police and the Chief of the Ambulance Brigade. Doctors and ambulances are stationed at key points round the circuit together with firemen and ambulance men, ready for action.

The Emergency Observers at the B.A.R.C. circuit at Goodwood keep the entire course under survey through field glasses from high towers at strategic points. Any serious incident is immediately reported to the Incident Officer, who is then responsible for putting the necessary emergency service into operation as quickly as possible. Ambulances and fire engines that have to use the course during a race carry a white flag and travel in the same direction as the competing cars, which are slowed down by the Flag Marshals.

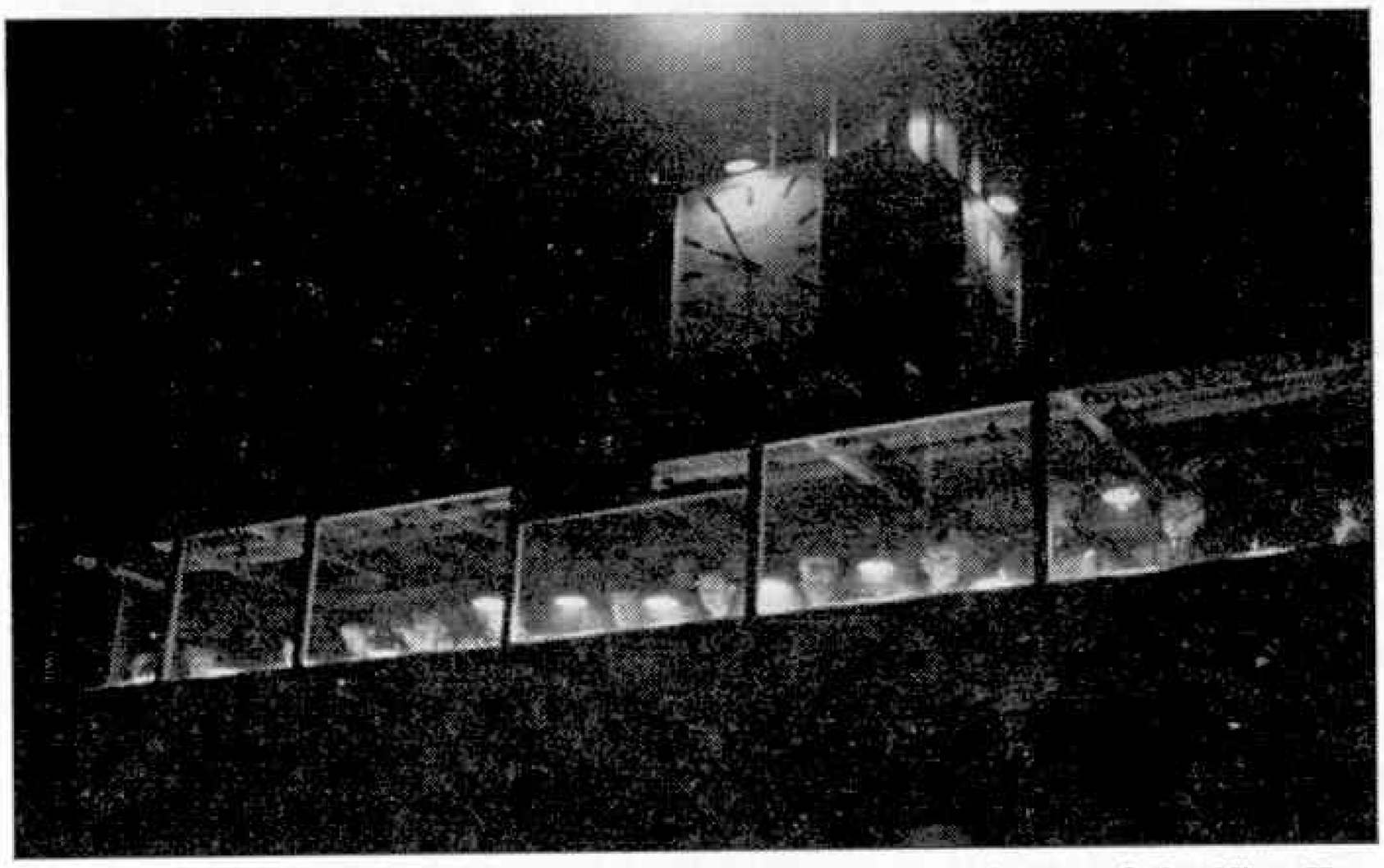
There is always considerable activity on race day in the paddock (behind the pits), and in the starting enclosure, where cars are marshalled before going out on to the circuit for a warming-up lap. The Chief Marshal is responsible for seeing that competitors are sent to the line ten minutes before the start of a race, and that in International and National racing-car events only two mechanics are with the car on the grid. There the Chief Starting Area Marshal takes over and, assisted by Start Line Marshals, ensures that the cars take up their correct grid positions. He must not allow a race to start until he gets



A pit stop for a Ferrari in the 1952 Le Mans 24 Hour Race. In the background a sign board is being held out for another competitor, due at any moment.

"Course clear" from the Chief Course Marshal.

With the cars on the starting grid and the flag about to fall, the official timekeepers and time-auditors commence operations. At Goodwood every car is individually timed for each lap, and each timekeeper has several cars to look after, assisted by spotters who record the numbers of the cars in their passing order every lap.



The Timekeeper's Box at Goodwood, with two hours to go in one of the Nine Hour Races there. Photograph by courtesy of the Motor.

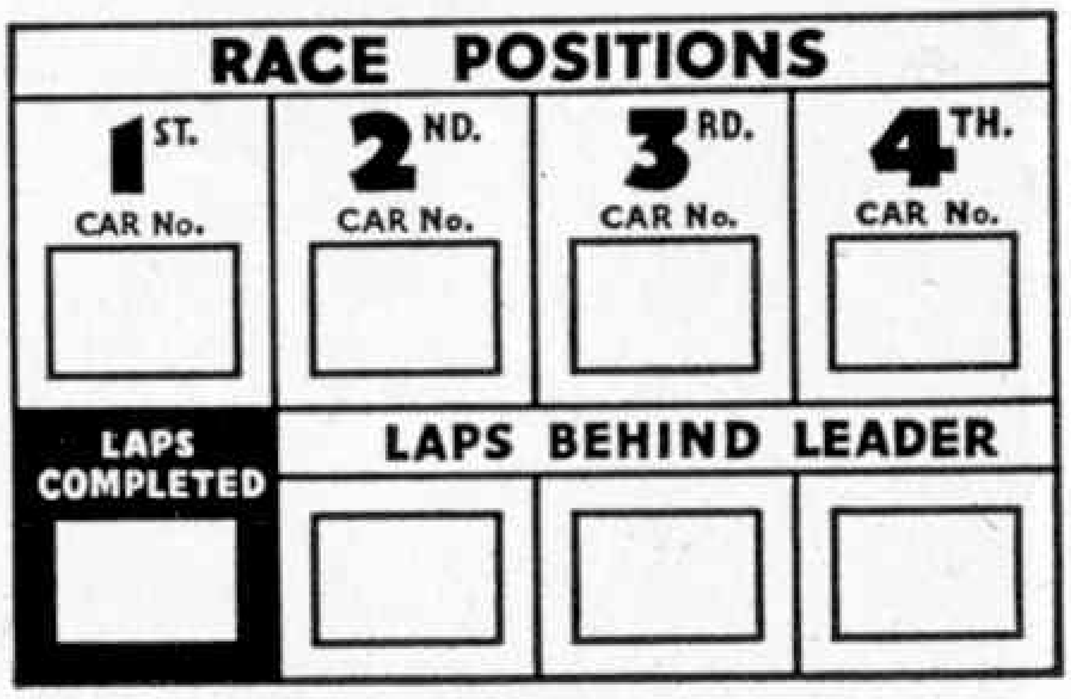
Timekeeping is so quick and efficient that within a few minutes of the winner receiving the chequered flag the results are announced over the loudspeakers—giving times for the first four cars, the average speed of the winner, and the time and speed of the car with the fastest lap. Timekeeping in such races as the Nine Hour Race which took place at Goodwood in 1952 and 1953 is a strenuous and exacting task, with something like thirty cars passing the Timekeeper's Box every ninety seconds.

It is the duty of the Chief Timekeeper to arrange hooter warning signals five minutes, two minutes and one minute before the start of a race. As each signal is given it is broadcast over the circuit loudspeakers and at the same time a marshal holds up a board with the number of minutes to go marked on it for the information of the drivers on the grid. The Chief Timekeeper also arranges a Starter for each race, agrees the finishing order with the Judges, and then issues detailed results to the Clerk of the Course, Announcer, Press Secretary and Scoreboard Control.

The Time Auditors check all the records of the Timekeepers and at regular intervals issue race positions and laps completed by all cars. This information, which is usually broadcast every fifteen minutes, is supplemented by score boards operated from Scoreboard Control. These boards, together with the running commentary over the loudspeakers, keep the spectators in the picture with up-to-the-minute information. Scoreboard Control is sited so that the Chief Controller and his assistants have a clear view of the Finish Line. At Goodwood there are five scoreboards, linked by telephone with the central control, each one showing race positions for the 1st, 2nd, 3rd and 4th cars, the total laps completed by the leading car, and the number of laps cars 2, 3 and 4 are lying behind the leader. The key to the information shown on the boards is the lap-scoring chart kept by one person in Scoreboard Control. This is a record of the number of each car every time it crosses the Finish Line, and the number of the lap just completed.

One of the largest and most impressive scoreboards is at Le Mans where the number of laps completed by each of the sixty odd cars in the race is shown under its number. Hundreds of feet long, it towers above the

(*Continued on page 306*)



The type of scoreboard used by the B.A.R.C. at Goodwood.

BOOKS TO READ

Here we review books of interest and of use to readers of the M.M. With certain exceptions, which will be indicated, these should be ordered through a bookseller.

"THE LOCOMOTIVES OF R. E. L. MAUNSELL"

By O. S. Nock, B.Sc.
(Edward Everard Ltd. 17/6)

When R. E. L. Maunsell in 1913 took charge of locomotive matters at Ashford on the former South Eastern and Chatham Railway he began an uphill task. Increasing traffic was taxing existing motive power to its limit in almost every class of service, and because of engineering restrictions it was not possible to meet demands merely by building bigger and heavier engines. Apart from the locomotive position, re-organisation at Ashford itself became desirable.

No sooner had these matters been eased somewhat than in the following year the 1914–18 war broke out, bringing with it many trials and difficulties. In spite of all this a forward locomotive policy was evolved and the foundations of future practice on advanced lines were laid down in the pioneer Maunsell 2–6–0 locomotive and the corresponding 2–6–4 tank. The immediate post-war years had their urgent difficulties too, yet the Maunsell team at Ashford scored a distinct success in the re-building and improvement of some existing 4–4–0s without material increase in their weight, a necessary condition at the time.

With the formation of the Southern Railway under the grouping scheme of 1923, Maunsell assumed the much greater responsibility involved in providing suitable motive power for what previously had been three separate railways. How he coped with the demands of the times until his retirement in 1937, in spite of restrictions in almost every direction, makes a fascinating story that is well told by the author. He gives no mere recital of the details of successive engine classes, but tells his readers much of the "inside story", with studies of the personalities concerned in development of such locomotives as the King Arthurs, the Lord Nelsons and the remarkably capable 4–4–0 Schools class.

The author recounts a selection of his own personal experiences with many of the engine classes considered. Illustrations are plentiful, and in an entertaining section dealing with re-builds and unfulfilled schemes there are diagrams of proposed 4–8–0, 4–6–2 and 2–6–2 tender engines that were never built.

"DANGER IN DEEP SPACE"

By Carey Rockwell (Publicity Products 3/6)

This is more than up-to-the-minute, it is an exciting yarn of space ship adventure a thousand years hence! Tom Corbett and his friends Roger Manning and Astro, three cadets of the Space Academy, U.S.A., are on an experimental trip in the space ship *Polaris* to test out some new equipment, when they and their chief, Major Connel, learn of a scheme of two notorious space freebooters to steal the rich mineral resources of a satellite of Tara, a planet in a far distant star system. How they prevent this provides a fine story.

Excellent line drawings illustrate this grand yarn.

"PHOTOGRAPHIC ENLARGING"

By David Charles, F.R.P.S. (Iliffe 6/–)

At one time photographic enlarging was regarded by amateur photographers as a luxury, but today it is becoming increasingly regarded as a necessity, owing partly to the growing popularity of compact folding cameras which take very small pictures. In this book the process of enlarging is fully explained, all the equipment, accessories and materials needed are described, and helpful advice is given on every aspect of the subject.

Many easy-to-follow diagrams are included, and there are also some excellent photographic examples in half-tone to illustrate what can be done in enlarging and what should be avoided.

"MEN WHO SHAPED THE FUTURE"

By Egon Larsen (Phœnix House 12/6)

It is always interesting to learn how famous inventions came about, or how some genius developed a crude machine or process to a degree of efficiency that revolutionised an industry. In his new book Mr. Larsen tells of the outstanding achievements of 11 famous men and gives brief biographies of as many more.

To mention a few of the great men included, there is Samuel F. B. Morse, inventor of the electric telegraph and the dot-and-dash signalling code named after him; Lord Kelvin, whose mirror galvanometer made it possible to lay a cable across the Atlantic; and Eli Whitney, whose cotton gin provided a mechanical means of removing from the cotton boll the covering of cotton fibres that are later spun into yarn. The invention of the typewriter, the discovery of the vulcanization of rubber and the development of the Bessemer process of making steel also are described in dramatic fashion.

Many of these stories have been told before, but Mr. Larsen brings the tale up to date by telling his readers about such things as the discovery of penicillin, the invention of the Sikorsky helicopter, the development of the Ferguson tractor, and the achievement of the 3-D film system. These and other excitingly true stories of invention and discovery make this a fascinating book that is also well illustrated.

"SPEEDING INTO SPACE"

By Marie Neurath (Max Parrish)

The growing interest in space travel, with its prospects of practical achievement within the lifetime of younger readers of the *M.M.*, is reflected in the spate of books on this fascinating subject that have appeared during the past year or so, several of which have been reviewed in the *M.M.*

This particular book, like previous ones in this series, is intended for the young reader and tells its story by coloured line drawings and brief, simply-worded text. Typical questions dealt with are: "How can a space-ship get away from the powerful pull of the Earth?"; "How can such a ship travel thousands of miles without using its engines?"; "How could we land on a spinning space-station, or navigate from the moving Earth to a moving planet?"

The book is available bound in boards at 6/–, or bound in cloth at 7/6.

"ABC MILITARY AIRCRAFT RECOGNITION 1954"

"ABC CIVIL AIRCRAFT RECOGNITION 1954"

By John W. R. Taylor (Ian Allan 2/6 each)

This 1954 edition of *ABC Military Aircraft Recognition* is almost entirely a new work. All the data has been revised and brought up to date, and 97 of the photographs and 30 per cent. of the silhouettes are new.

The booklet follows the same lines as earlier editions, and contains half-tone photographs and three-view silhouettes of just over 60 major types of British, American and Canadian aircraft, together with brief specification details and notes on recognition features of the machines. The aircraft are dealt with alphabetically according to type.

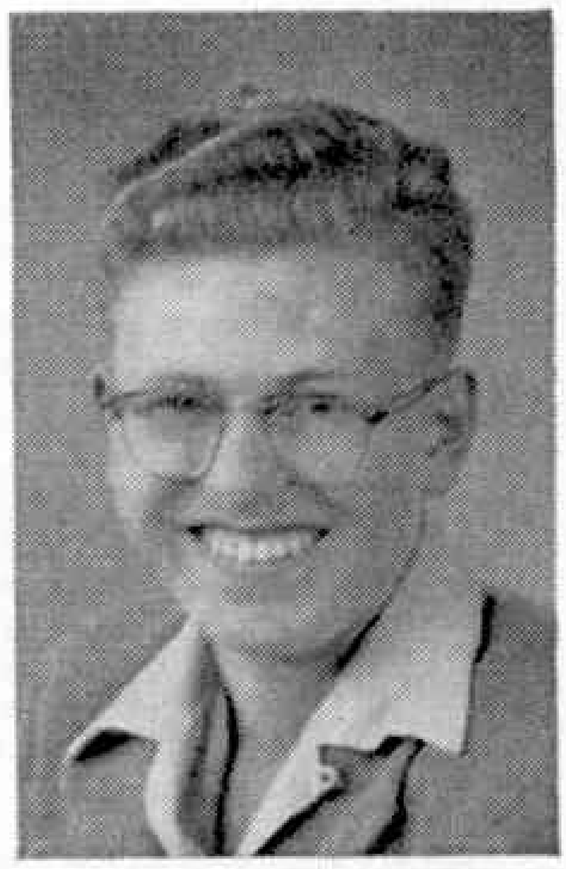
Illustrations and dimensions of 36 less important aircraft of the above countries form a second section at the end of the book.

ABC Civil Aircraft Recognition performs a similar service in respect of British and foreign civil aircraft likely to be seen in the United Kingdom, and likewise has been thoroughly revised, with the result that 46 of the photographs in the main section of the book are new, as are more than half of the 43 illustrations of minor types that form the second part of the work.

Josef Kalin, Freienbach, Switzerland, whose keenness for Meccano construction won him a prize in the International Model-Building Competition.

Among the Model-Builders

By "Spanner"



Michael Collins, Toronto, Canada, winner of a £5 prize in the International Contest.

POINTS FROM MY CORRESPONDENCE

I wonder how many times, when building a new model, Meccano boys have said "If only I had a curved Angle Girder," or perhaps it was some special kind of Strip or Plate that they wanted at that particular moment. At the time it no doubt seemed that such special parts would have solved all their difficulties, and probably they wondered why such parts had not been included in the Meccano system! Many of them write to tell me of their ideas, and I can assure them that each suggestion does receive careful consideration. Unfortunately, however, many ideas that seem promising on paper reveal serious shortcomings when we try to put them into practice in our model-building department, and if these difficulties cannot be overcome the suggestions have to be rejected.

It must be remembered that two of the chief features of the Meccano system are its standardisation, and the great adaptability this gives. These characteristics result in your being able to use each Meccano part for a variety of different purposes. Many of the new parts suggested by my correspondents have to be turned down because they serve only a single purpose, and they cannot therefore be included in a system of which the keynote is adaptability.

Other suggestions I receive are not practical from a manufacturing point of view, although the parts themselves might well prove useful in the system. By far the greater number of ideas sent to me have to be rejected, however, because there are already parts in the Meccano range that provide satisfactory substitutes. For example, several readers have suggested that a 2½" dia. Flanged Wheel would be useful. No doubt it would, but I do not think that many boys would be prepared to buy such a Wheel when they can quite easily make a very serviceable substitute by bolting a Wheel Flange (Part No. 137) to a Face Plate (Part No. 109). Each of these parts has a great many other uses also, so that it would be a waste of material to manufacture a special Flanged Wheel that would be very limited in its uses.

I mention these matters so that readers will more readily understand why it is not possible to adopt all the bright ideas they think up and tell me about from time to time. But that is no reason why you should not send them! Do so every time an idea strikes you. All suggestions will be welcome and each one will receive careful consideration.

One of my correspondents has suggested recently that a special article on the lubrication of Meccano Electric Motors would be helpful to model-builders. This subject is dealt with in the instructions leaflet packed with the Motors, however, and as it is a comparatively simple job, I do not think a special article is really required. Many model-builders seem to be puzzled over the choice of a suitable grade of oil and the frequence with which lubrication is necessary, however, and I hope the following notes on the subject will be of some help to these readers.

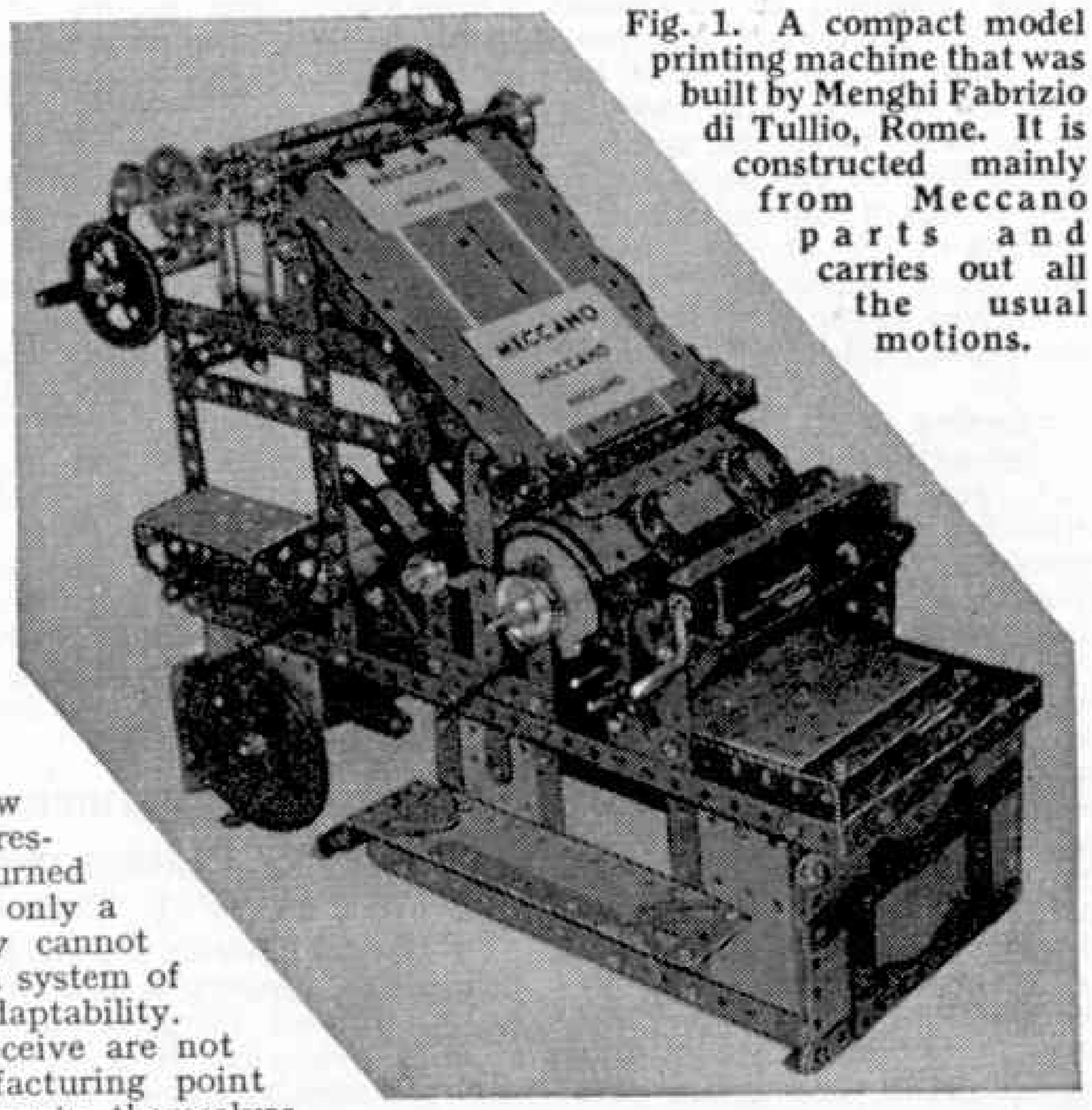


Fig. 1. A compact model printing machine that was built by Menghi Fabrizio di Tullio, Rome. It is constructed mainly from Meccano parts and carries out all the usual motions.

The only parts of Meccano Electric Motors that need lubricating are the bearings for the armature shafts, and any good quality light machine oil can be used for this purpose. Cycle or sewing machine oil is quite satisfactory, but it should be applied sparingly. The bearings require only a thin film of oil, and if too much is applied the surplus will be flung off when the Motor is set in motion and there is a danger that it may find its way on to the commutator and brushes. Should it do so it will cause sparking and reduce the efficiency of the Motor. Any surplus oil therefore should be wiped off straight away with a clean soft rag.

The E20R Motor armature shaft runs in plain metal bearings, and one or two drops of oil should be applied to each bearing at least each half hour the Motor is in use. The bearings of the E020 Motor however, are provided with oil pads, and oil should be applied to these drop by drop until the pads are saturated. The use of oil pads reduces the need for frequent oiling, and it is necessary only when the pads are seen to be rather dry. **It is a good plan to examine them at regular intervals.**

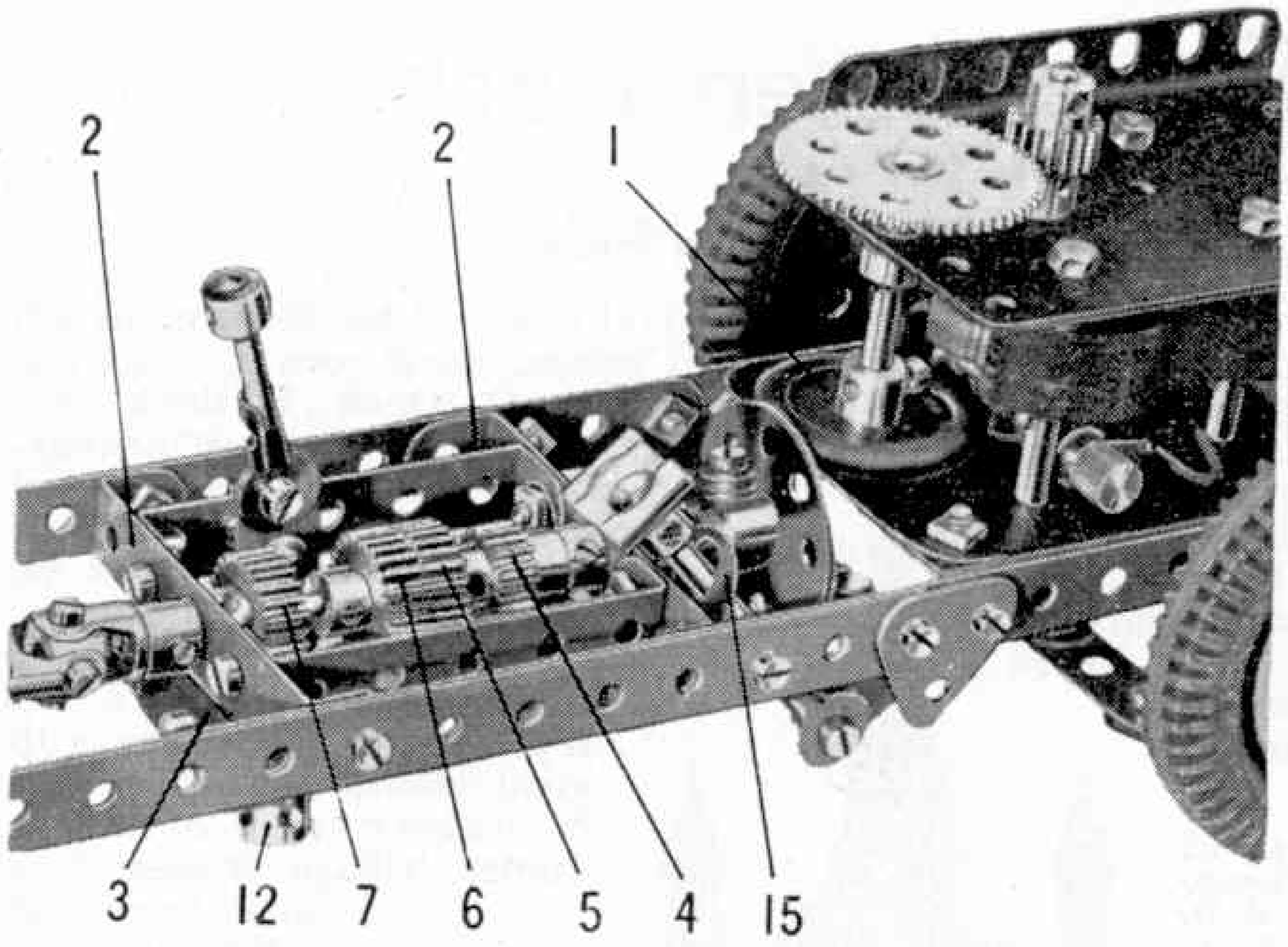


Fig. 2. A simple clutch and gear-box suitable for a model chassis.

A CLUTCH AND GEAR-BOX FOR A CAR

The friction clutch and the two-speed and reverse gear-box shown in Figs. 2 and 3 are designed specially for use in small model vehicles driven by an E20R Electric Motor, and as a matter of fact they are used in the car featured as this month's new model, which is described on pages 294–5 of this issue.

The chassis side members are spaced 2½" apart and an E20R Electric Motor is mounted on its side between them. A ½" Pinion fixed on the Motor shaft drives a 57-tooth Gear on a 2" Rod that is mounted vertically in its side-plates. A Collar is used to hold this Rod in position, and the Rod carries a 1" Pulley 1 fitted with a Rubber Ring.

The gear-box housing is formed from two 2½" × ½" Double Angle Strips 2 bolted to two further 2½" × ½" Double Angle Strips as shown. A 1½" Strip 3 is attached to each Double Angle Strip 2 by means of two Fishplates.

The input shaft is a 2½" Rod and it is fitted with a Collar, a ½" Pinion 4 and a ¾" Pinion 5. The Rod projects about ¼" into a ¾" Pinion 6 on the output shaft, which is a 1½" Rod and carries also a ¾" Pinion 7. The layshaft is a 3" Rod fitted with a ¾" Pinion 8, a ½" Pinion 9 and a Collar 10. The ½" reverse Pinion 11 is free to turn on a 1½" Rod between a Collar and a Coupling 12. This Coupling is attached tightly to the frame on a bolt that fixes one of the Strips 3 to a Fishplate.

The gear change lever is a 1" Rod held in a Rod and Strip Connector that is bolted to a Double Arm Crank. The Double Arm Crank pivots on a lock-nutted ½" Bolt passed through the side of the housing, and a ⅜" Bolt held by two nuts in the Double Arm Crank engages between a Washer placed next to the Pinion 9 and the Collar 10 on the layshaft. When the lever is moved to the rear the Pinion 9 engages Pinions 5 and 6 to provide top gear. Movement of the lever in a slightly forward direction engages Pinions 4 and 8, and 9 and 6, to give bottom gear. When the lever is moved as far forward as possible Pinions 4 and 8 and Pinions 9, 11 and 7 are in mesh, and these give the reverse drive.

The driven member of the clutch is a Bush Wheel, to the boss of which two Fishplates 13 are bolted. Three Washers are placed on each bolt. The slotted holes of the Fishplates slide over bolts in a Collar 14 fixed on the gear-box input shaft, and a Compression Spring is placed on the shaft between this Collar and the Bush Wheel. The Bush Wheel must slide freely on the shaft. One of the Double Angle Strips 2 is bolted by its lugs to the chassis, and the other Double Angle Strip 2 is connected to the chassis by Angle Brackets. It is necessary to adjust the position of Collar 14 so that the Bush Wheel is pressed against the Rubber Ring on the Pulley 1.

The clutch release pedal is a 2" Rod that is passed through a Fishplate 15 and is held in a Rod and Strip Connector lock-nutted to a Double Arm Crank 16. This is fixed on a 3" Rod supported in 1" Triangular Plates bolted to the chassis, but is spaced from the side of the chassis by six Washers. Two Pawls with bosses, 17, are fixed on the 3" Rod so that their ends bear against the face of the Bush Wheel. When the clutch pedal is depressed the Pawls force the Bush Wheel away from the Rubber Ring and so disengage the clutch. Care must be taken to prevent the friction surfaces from becoming oily.

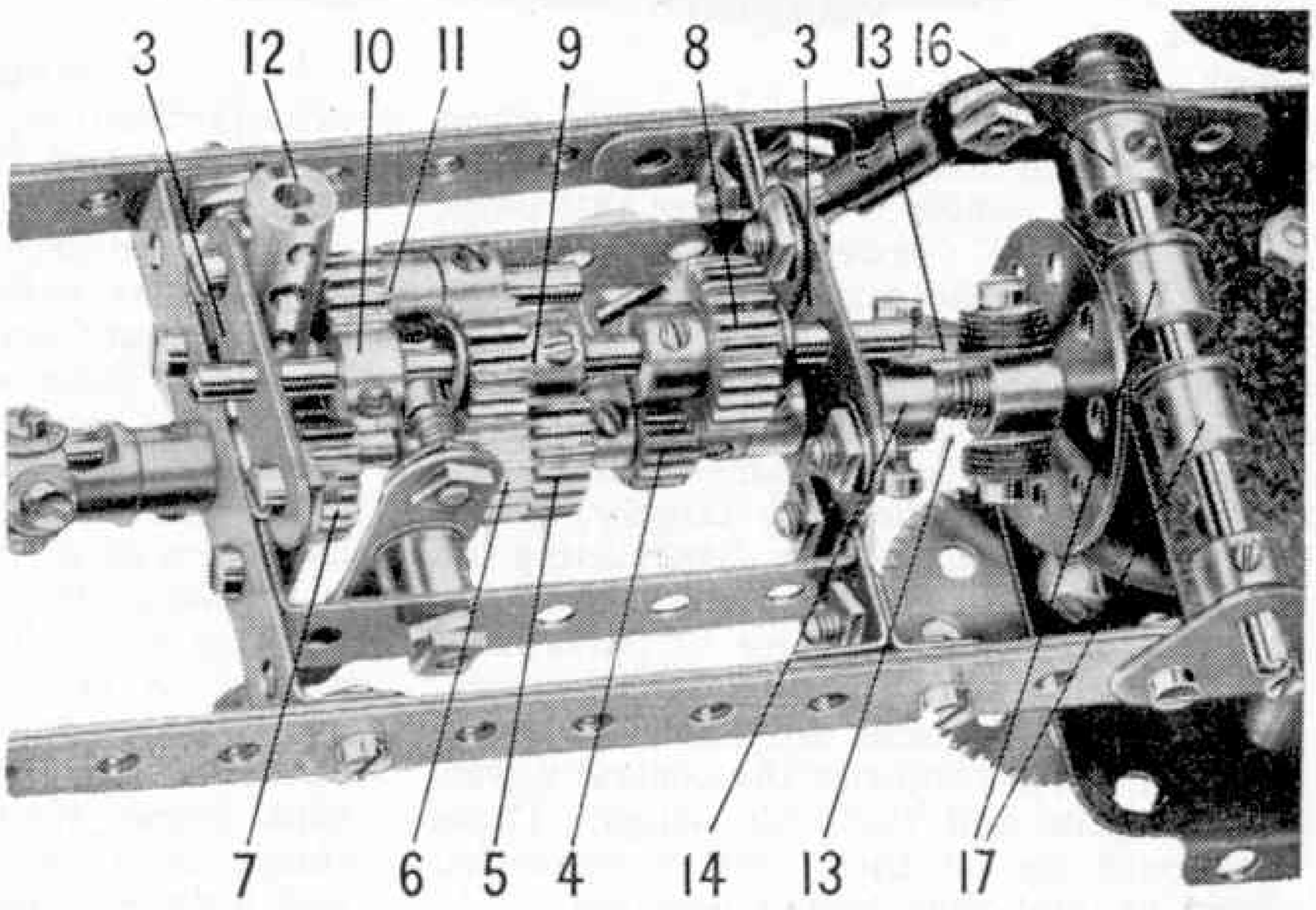


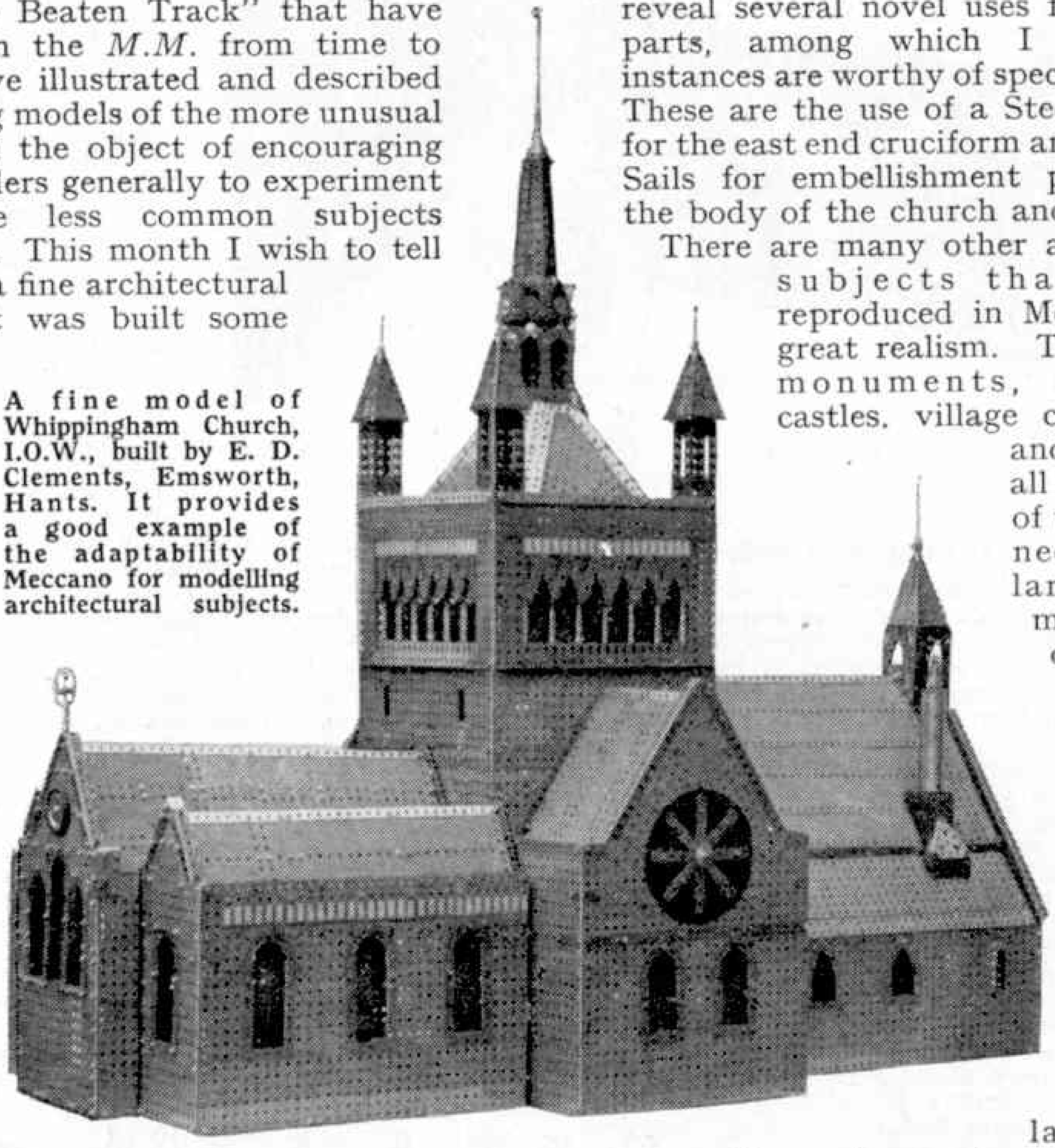
Fig. 3. Another view of the clutch and gear-box seen from the underside.

Off the Beaten Track

By "Spanner"

A Fine Architectural Model

IN the articles under the heading "Off the Beaten Track" that have appeared in the *M.M.* from time to time, I have illustrated and described outstanding models of the more unusual types, with the object of encouraging model-builders generally to experiment with these less common subjects themselves. This month I wish to tell you about a fine architectural model that was built some time ago by E. D. Clements, Emsworth, Hants, and which won for him a prize in a Meccano Competition. It is a reproduction of Whippingham Church in the Isle of Wight, which was often visited by Queen Victoria when she was in residence at Osborne House.



A fine model of Whippingham Church, I.O.W., built by E. D. Clements, Emsworth, Hants. It provides a good example of the adaptability of Meccano for modelling architectural subjects.

The model, which is shown on this page, is a splendid demonstration of the adaptability of Meccano parts for building models of a non-engineering nature, and it is one of the most attractive architectural models that I have seen. The effectiveness of its appearance and the air of reality that it possesses, are due very largely to the care that has been taken in determining the proportions of the various sections of the building, and to the choice of parts used to build up and embellish the structure.

The model is built up from six main sections, which comprise the central tower, central spire and the four wings. These were built up on their own frameworks, plated in, and then bolted together.

Careful study of the illustration will reveal several novel uses for Meccano parts, among which I think two instances are worthy of special mention. These are the use of a Steering Wheel for the east end cruciform and Windmill Sails for embellishment purposes on the body of the church and the tower.

There are many other architectural subjects that can be reproduced in Meccano with great realism. They include monuments, bridges, castles, village crosses, inns and houses of all kinds. Some of them do not need a very large assortment or quantity of parts for their construction, but others are only suitable for those model-builders who possess large Outfits.

The main requirements in parts are a plentiful supply of Plates both Flexible and Perforated, Girders and Strips. Most of the other parts necessary are mainly required for decorative purposes and there are a great variety of parts that can be used such as Curved Strips, Flat Trunnions, Windmill Sails and Corner Gussets.

It is my hope that the few particulars of Clements' fine model that I have given here will stir up enthusiasm among readers to have a go at this kind of model-building as a change from the usual run of cranes, vehicles and other subjects of engineering nature. A great deal of fun and pleasure can be obtained from making an occasional "break-away" of this kind, and I hope that those readers who decide to try their hand will send me photographs and details of their models in due course.

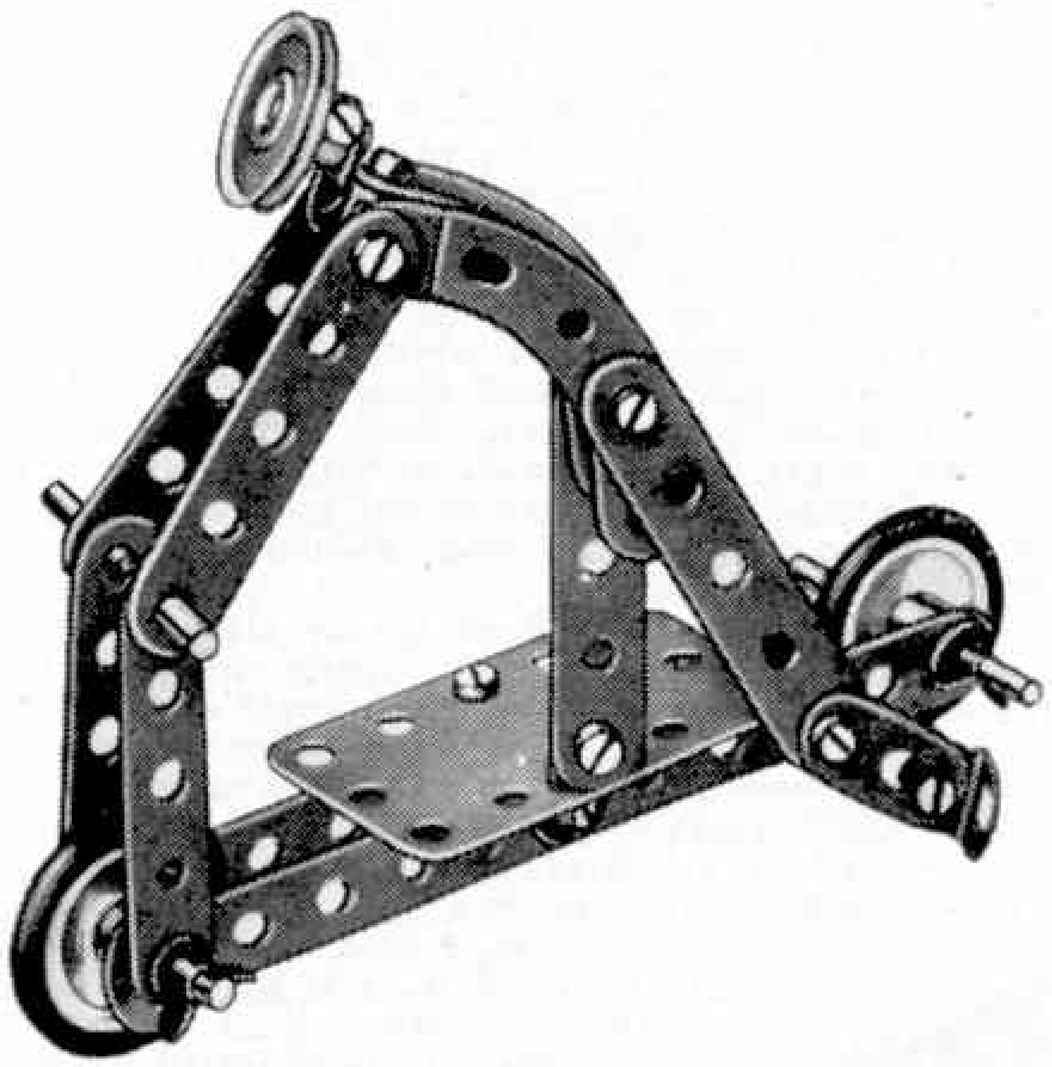
"Simplicity" Model-Building Contest

Big Prizes for Small Models

AN engineer's true merit is best shown when he is endeavouring to construct a mechanism with a minimum of material, or with parts that are not most suited to the purpose. Similarly the inventive genius of a Meccano boy will be more readily brought out when he is "up against it", that is, when he has not every desired part at hand with which to construct his model.

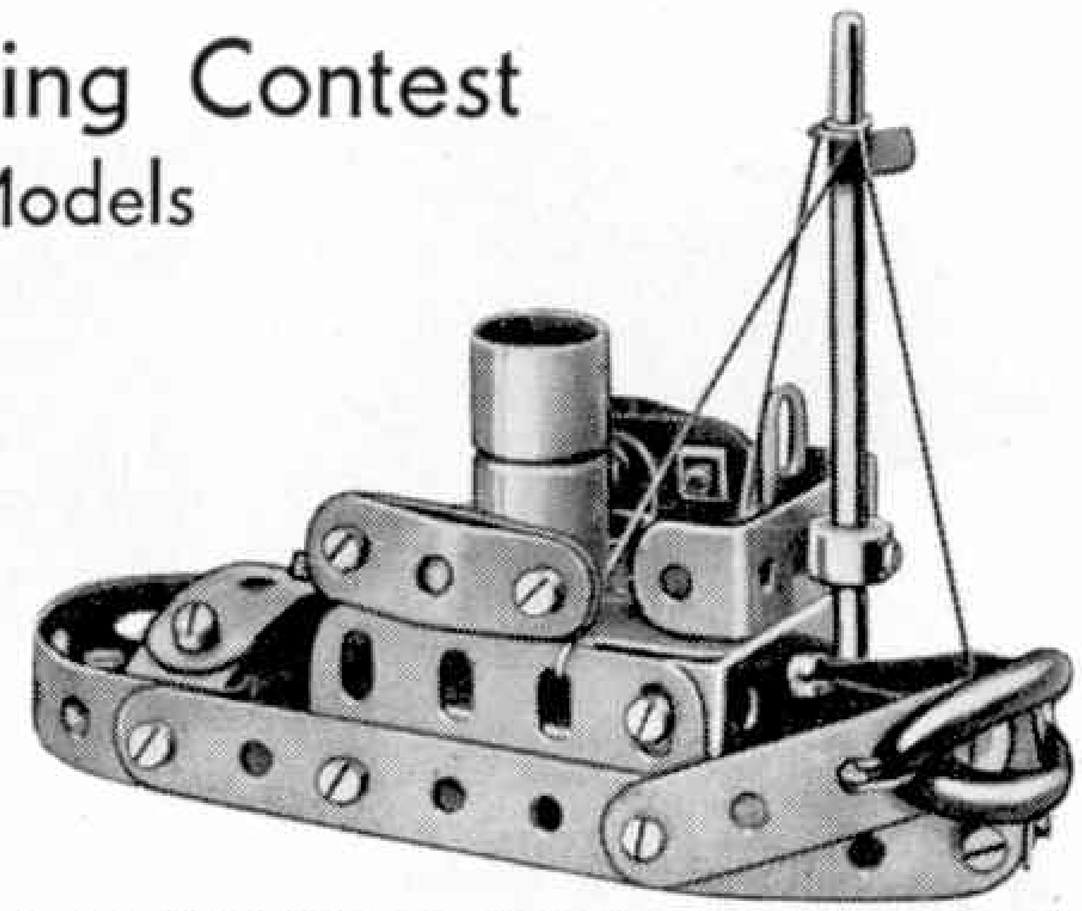
On the other hand, even the best model-builders often err on the side of using too many parts, where fewer and simpler parts would fulfil the required functions efficiently, and to give the average Meccano boy an opportunity of making good use of his inventive ability, and to prove that he possesses this, we are organising this special "Simplicity" contest, which was first announced last month.

You should not think that in entering this Contest you are restricted to any specified number of parts. You may use



A novelty that would stand a good chance of a Prize in a Simplicity Competition of the kind announced on this page. This scooter rider is the work of Rodney Matthews, Sutton Coldfield.

any number or variety of parts that you wish, but the prizes will be awarded to those boys who succeed in constructing the most ingenious models with the *smallest numbers of parts*. Neither should you think that this Contest is for the owner of a small Outfit only, as it is possible to employ in the construction of simple models and mechanisms many Meccano accessories



A simplicity tug-boat. Note the novel use for a 1" Rubber Ring in forming the bumper at the bows of the boat.

such as Cranks, Gear Wheels, Couplings, etc., that are not to be found in the smaller Outfits. The competitor who submits the smallest model will not necessarily obtain the First Prize.

It is possible, of course, to bolt together two or three Strips and a few Pulleys, and call the finished model a car or an aeroplane, but such a model would have little chance of obtaining a prize! You should first choose a suitable subject and then try to model it with the smallest number of Meccano parts *consistent with a realistic effect*. Two examples of simplicity models of this kind that have won prizes in previous contests are shown on this page.

When you have completed your model you should obtain either a photograph or a good drawing of it. You should then write your age, name and address on the back of the illustration and send it to *"Simplicity Model-Building Contest, Meccano Ltd., Binns Road, Liverpool 13"*. The actual model must not be sent.

The Competition will be divided into two Sections: A, for readers under 14 years of age, and B, for readers over 14 years of age. The closing date is 31st July next.

The Prizes to be awarded in each Section of the Competition are as follows. First, Cheque for £3/3/–. Second, Cheque for £2/2/–. Third, Cheque for £1/1/–. There will be also Ten Prizes each of 10/– and Ten Prizes each of 5/–.

Your photographs or drawings, if unsuccessful, will be returned to you provided that a stamped addressed envelope of the necessary size is enclosed. It should be noted, however, that photographs of prize-winning models become the property of Meccano Ltd.

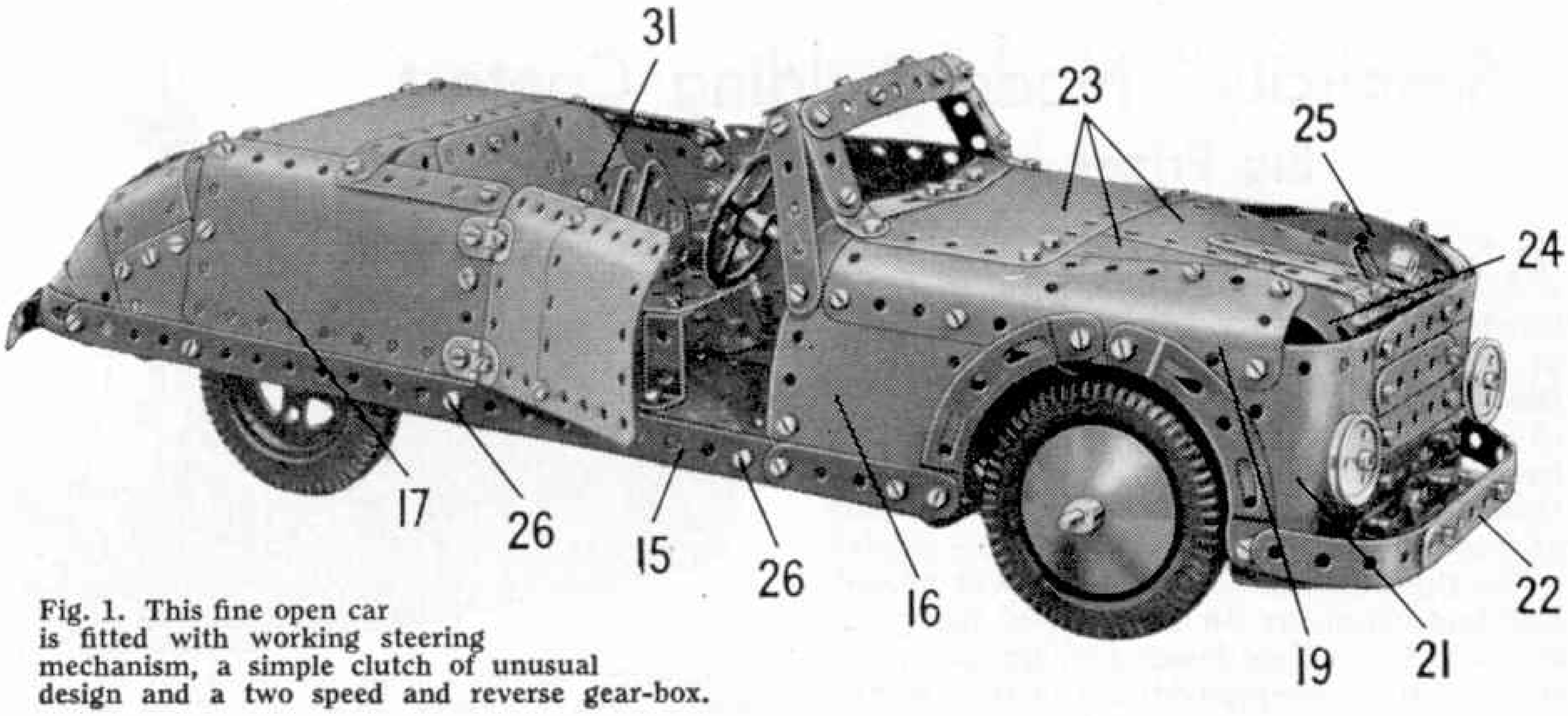


Fig. 1. This fine open car is fitted with working steering mechanism, a simple clutch of unusual design and a two speed and reverse gear-box.

New Meccano Model

Open Car

CARS are always popular with Meccano boys, and I am sure that the sporty open model shown in Fig. 1 will prove an attractive subject for model-builders who possess the parts and an E20R Motor required for its construction.

Each side of the chassis consists of two 12½" Strips overlapped 16 holes, and these are connected at the front and at the rear by 2½" × ½" Double Angle Strips 1 and 2. An E20R Electric Motor is bolted to one side of the chassis as shown in Fig. 3, and it is connected to the other side by an Angle Bracket.

The clutch and gear-box used in this model are assembled as described in the "*Among the Model-Builders*" pages of this issue, and the gear-box is bolted in position in the chassis as shown.

A Universal Coupling is fitted to the gear-box output shaft and to a 3½" Rod that carries a ½" Pinion 3. The Rod is free to turn in a Coupling 4, which is mounted on the rear axle between a Collar and a 1½" Contrate 5. The rear axle is assembled from a 3½" and a 2" Rod joined by a Coupling, and is held in place in the chassis by this Coupling and by a Collar.

The front axle is made by bolting a 4½" Strip 6 to a 2½" × ½" Double Angle Strip fixed across the chassis. A 1" Reversed Angle Bracket is fixed at each end of the Strip 6 by a bolt 7. A Threaded Pin is passed through the top lug of each Reversed Angle Bracket and is fixed in a Coupling, and a 1" Rod is passed through an end hole of the Strip 6 and is also fixed in the Coupling. Each front wheel is free to turn on a 1½" Rod held in the centre transverse hole of the Coupling. The wheel is placed with its boss outward, and is spaced from the Coupling by three Washers. One of the 1" Rods carries a Crank 8 and the other is fitted with a Bell Crank 9. The ends of these parts are connected by two 3" Strips 10 overlapped four holes and pivoted at each end on a lock-nutted bolt.

A 1½" Contrate 11 is fixed by its grub screw on a ⅜" Bolt passed through an Angle Bracket, but the Contrate is spaced from the Angle Bracket by a Washer. The Angle Bracket is bolted tightly in the second hole from the front of the side-plate of the E20R Electric Motor, the bolt fixing also a second Angle Bracket facing to the rear at right angles to the first Angle Bracket. A Fishplate is bolted tightly to the Contrate, and to it is lock-nutted an Angle Bracket 12, Fig. 2. A Fishplate is lock-nutted to this Angle Bracket and is lock-nutted also to an arm of the Bell Crank 9.

A ⅜" Bolt 13, fitted with three Washers, is fixed by a nut in the Double Angle Strip 1, and two 1⅛" Bolts 14 are held by nuts in the Double Angle Strip 2.

Each side of the body is assembled on a strip 15, made from a 12½" and a 2½" Strip overlapped four holes. The side consists of a 2½" × 2½" Flexible Plate 16, two 4½" × 2½" Flexible Plates 17 overlapped lengthways four holes, and four 2½" × 1½" Flexible Plates 18 arranged as shown in Fig. 4. The front

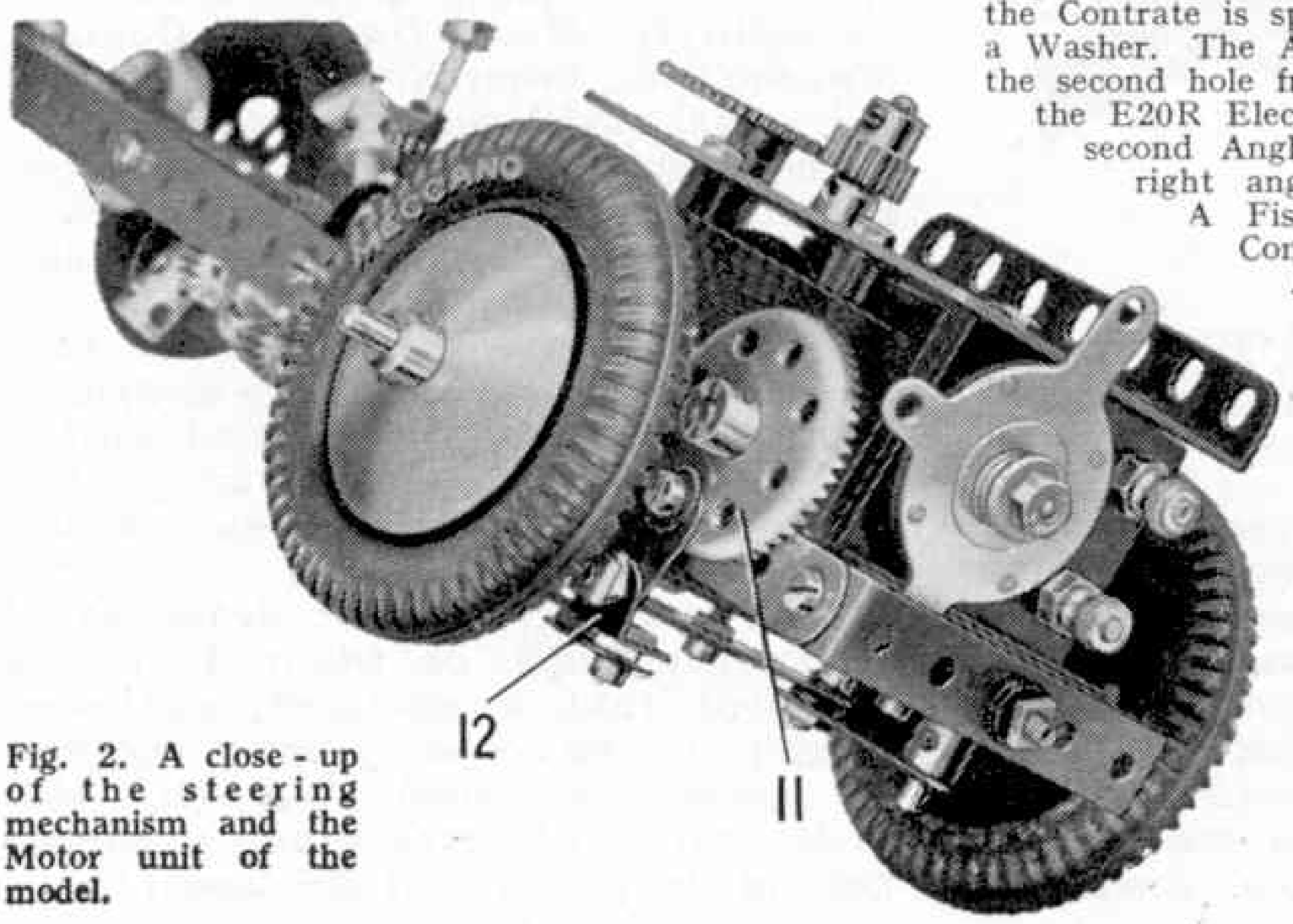


Fig. 2. A close-up of the steering mechanism and the Motor unit of the model.

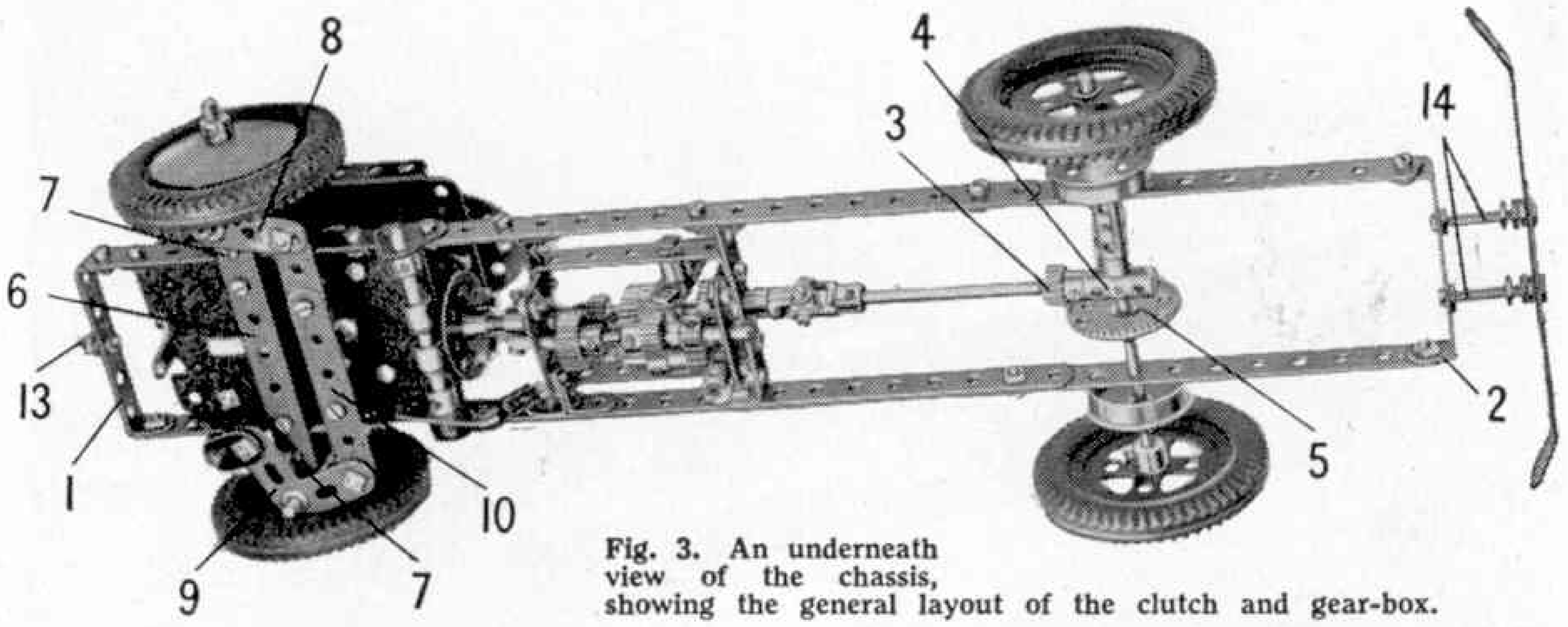


Fig. 3. An underneath view of the chassis, showing the general layout of the clutch and gear-box.

wheel arch is formed by two 3" Stepped Curved Strips bolted at their upper ends to a curved $5\frac{1}{2}" \times 1\frac{1}{2}"$ Flexible Plate 19. Each door consists of two $2\frac{1}{2}" \times 2\frac{1}{2}"$ Flexible Plates overlapped two holes and supported by two Hinges.

The sides are connected at the tail by a $5\frac{1}{2}" \times 2\frac{1}{2}"$ Flexible Plate edged at the front by a $5\frac{1}{2}"$ Strip and bolted to the top edges of the Plates 17. Two curved $4\frac{1}{2}" \times 2\frac{1}{2}"$ Flexible Plates are fixed to three of the Plates 18 on each side as shown in Fig. 4. Two Formed Slotted Strips on each side are bolted to the ends of the strips 15 and are connected by two $3\frac{1}{2}"$ Strips 20, which are joined together by Fishplates.

The radiator grille is formed from two $1\frac{11}{16}"$ radius Curved Plates 21 connected together by two $2\frac{1}{2}" \times 1\frac{1}{2}"$ Flexible Plates. A $4\frac{1}{2}"$ Strip and two $2\frac{1}{2}"$ Strips are bolted to the front, and the headlamps, which are represented by 1" loose Pulleys, are fixed to the ends of the $4\frac{1}{2}"$ Strip. A $3\frac{1}{2}"$ Angle Girder extended at each side by a $2\frac{1}{2}"$ Stepped Curved Strip, is bolted to the lower edge of the grille. The front bumper 22, made from two $5\frac{1}{2}"$ Strips curved at their ends, is attached to the $3\frac{1}{2}"$ Angle Girder by two Angle Brackets.

The top of the bonnet consists of three $4\frac{1}{2}" \times 2\frac{1}{2}"$ Flexible Plates 23 arranged as shown in Fig. 4. It is connected to the upper edge of the radiator grille by two Angle Brackets, and is edged at the rear by two Formed Slotted Strips joined at the centre by a $1\frac{1}{2}"$ Strip. A Formed Slotted Strip 24 is fixed to each of the Plates 19 and a $2\frac{1}{2}"$ Curved Strip 25 is attached to it by an Angle Bracket.

The windscreen on each side consists of a $2\frac{1}{2}"$ Strip, and a $1\frac{1}{2}"$ Strip attached by an Obtuse Angle Bracket. The top ends of these Strips are connected by Angle Brackets and support two 3" Strips overlapped four holes. A 4" Stepped Curved Strip is bolted to Angle Brackets fixed to the 3" Strips.

The floor is formed by a $4\frac{1}{2}" \times 2\frac{1}{2}"$ Flexible Plate on each side bolted at their ends to two built-up strips, each of which is made from two $5\frac{1}{2}"$ Strips overlapped 10 holes. These strips are connected to the sides by Angle Brackets held by bolts 26 on each side. Three 2" Strips are bolted between the rear three holes of each $4\frac{1}{2}" \times 2\frac{1}{2}"$ Flexible Plate, and a $3\frac{1}{2}"$ Strip 27 is attached to the centre one of the three Strips. Two $1\frac{1}{2}"$ Strips 28, Fig. 4, are bolted in place to leave a gap to accommodate the gear-lever. A $3\frac{1}{2}"$ Strip 29 is attached to one side of the floor by Fishplates.

The footboard 30 consists of two $5\frac{1}{2}"$ Strips overlapped 10 holes, with two $2\frac{1}{2}"$ Strips attached to them by Fishplates. It is connected to the sides of the body by Angle Brackets. The dashboard is formed by a $2\frac{1}{2}"$ Curved Strip and a $2\frac{1}{2}"$ Strip on each side. The Curved Strips are joined at the centre by a $1\frac{1}{2}"$ Strip, and the $2\frac{1}{2}"$ Strips are connected by a Fishplate. The dashboard is attached to the centre of the rear edge of the bonnet and to the sides of the body by Angle Brackets.

Each front seat is formed by a Girder Bracket fitted with two Flat Trunnions, and is supported by a 1" Reversed Angle Bracket. The back of the rear seat is made from two Semi-Circular Plates and a $2\frac{1}{2}" \times 1\frac{1}{2}"$ Flexible Plate bolted to a $5\frac{1}{2}"$ Strip 31. It is connected by Angle Brackets to the seat cushion, which is a $5\frac{1}{2}" \times 1\frac{1}{2}"$ Flexible Plate. The front edge of the seat is made from two $5\frac{1}{2}"$ Strips joined by Fishplates and attached to the seat cushion by Angle Brackets. The rear seat is bolted (*Continued on page 306*)

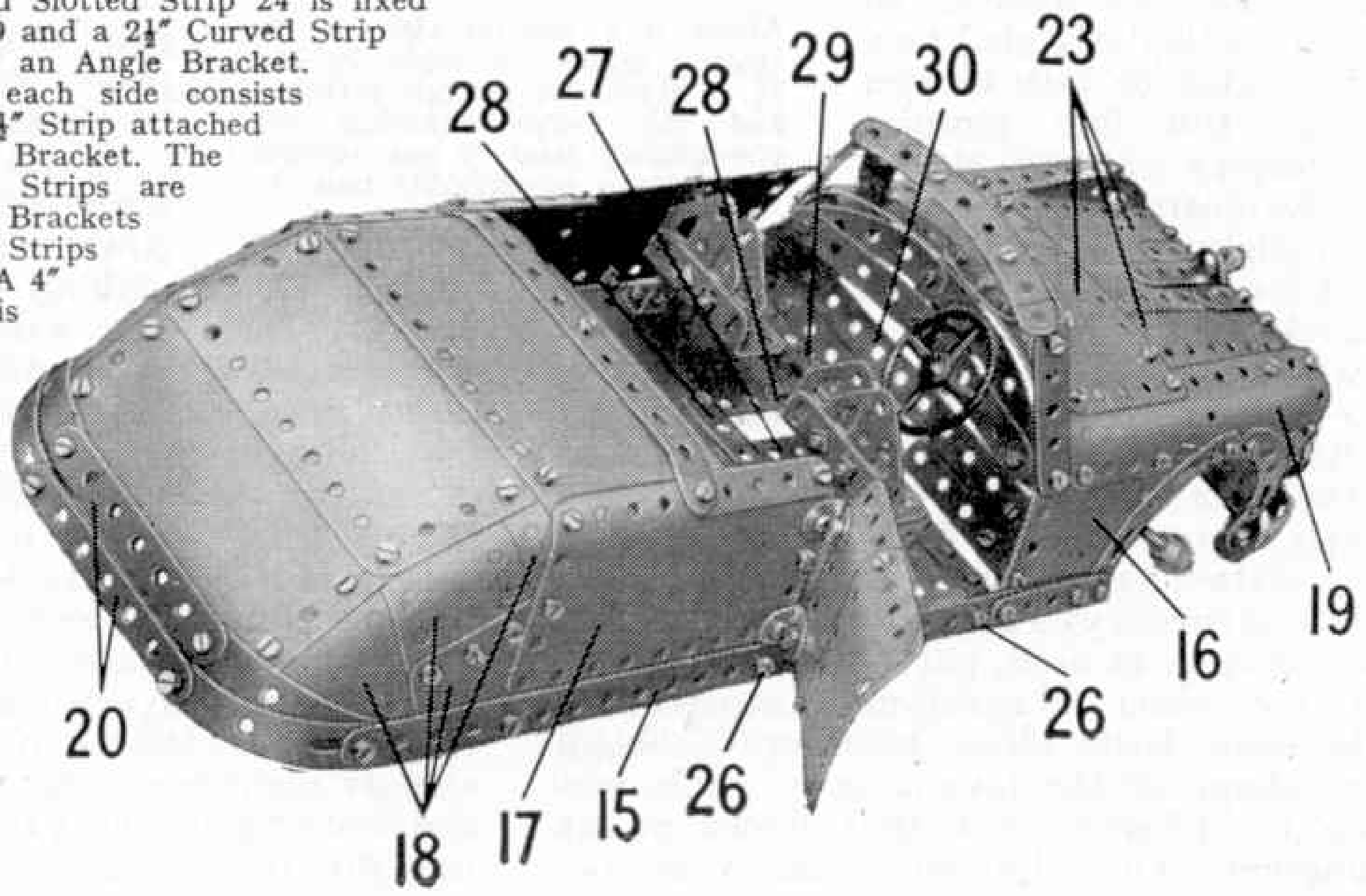
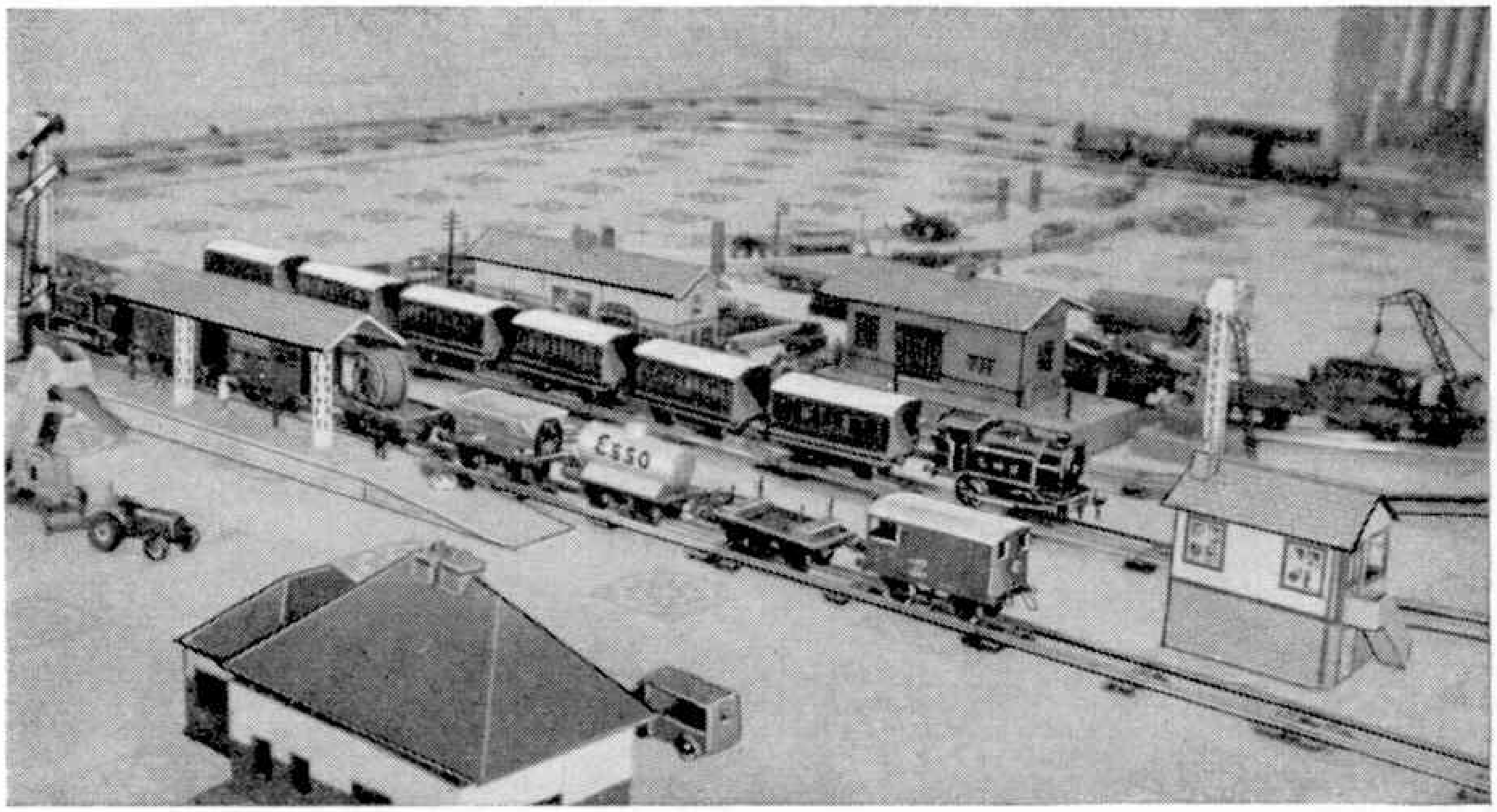


Fig. 4. The car body removed from the chassis. This view shows the arrangement of the Plates that form the tail.



HORNBY RAILWAY COMPANY

By the Secretary

Fun with a Hornby Layout

NOWADAYS one does not often hear of a really extensive Gauge 0 layout because the space that such systems require is difficult to find. There are plenty of small layouts in Gauge 0, for I think many of us begin our railwaying in the simplest possible way with a Hornby Clockwork Train Set. Hornby Gauge 0 Trains in fact are extremely popular, and you will recall the interesting developments in the range that I mentioned last month. So I am particularly glad now to be able to talk to you about the fine Hornby Clockwork railway shown in the illustrations on these two pages.

Above is a general view of the Hornby layout developed by Mr. H. J. Holt. The Station premises and the Goods Platform are conveniently near to one another and form a recognisable unit, as in actual practice.

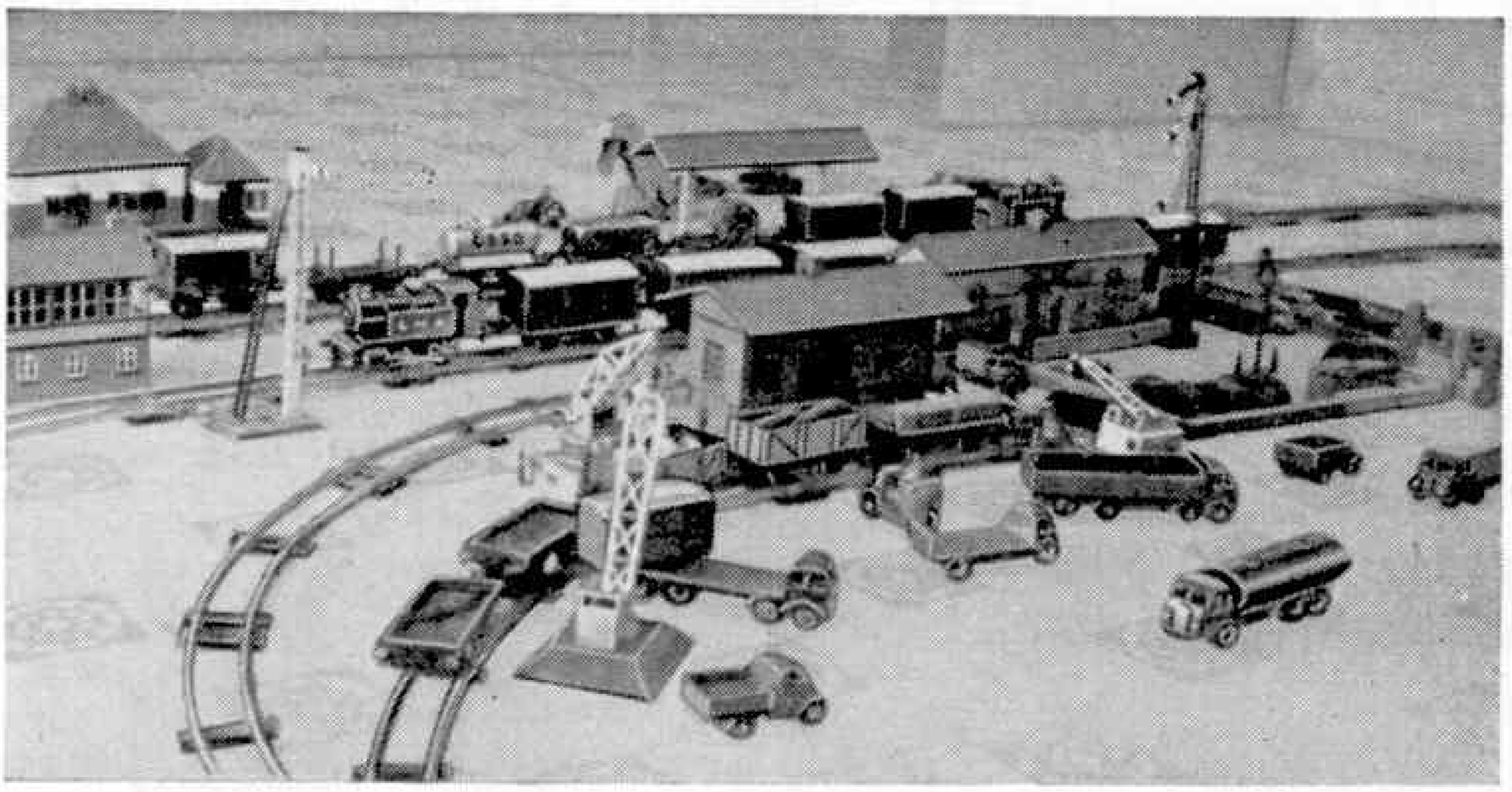
The system was developed by Mr. H. J. Holt, primarily for the use of his boys, and it is interesting to find that the railway actually began when the Holt family were living in Damascus. The diagram on the opposite page represents the full development of the system as planned, but this particular state of things was not quite attained there. The system as used, parts of which appear in the other illustrations, incorporated the same basic ideas, however, although the shape of the layout as a whole was slightly different from that shown in the diagram. One difference was that the goods sidings had to be laid out with curves for the most part, instead of with straight rails.

In planning the line several considerations had to be borne in mind. The railway was laid on the floor and space inside the track had to be left for one or other of the operators to work in, as well as to allow for the goods yard, and a main road crossing between this and an aerodrome. This was done fairly easily, and the illustration on this page shows that there was plenty of room in which to work.

Continuous main lines were laid so that up and down trains could run without interfering with one another. You will notice that the diagram shows a connection that goes direct from the outer track to the inside line leading to the goods yard. The manner of leading this across the inner main line affords an interesting instance of the use of the Hornby Acute-Angle Crossing.

This connection became specially useful for an operating move that was developed after a little experience. In addition to the trains on the main lines that I have already mentioned, there would be a third one working in the yard. This could be brought to a "halt" or small station

situated on the loop inside the inner main line. It would then begin a further journey from there over either the inner main track or the outer one as required. To allow this to be done, of course, the train already on the particular track selected would have to be brought "inside", either by means of the Acute-Angle Crossing connection referred to, or through the Points forming a crossover on the opposite side of the layout.



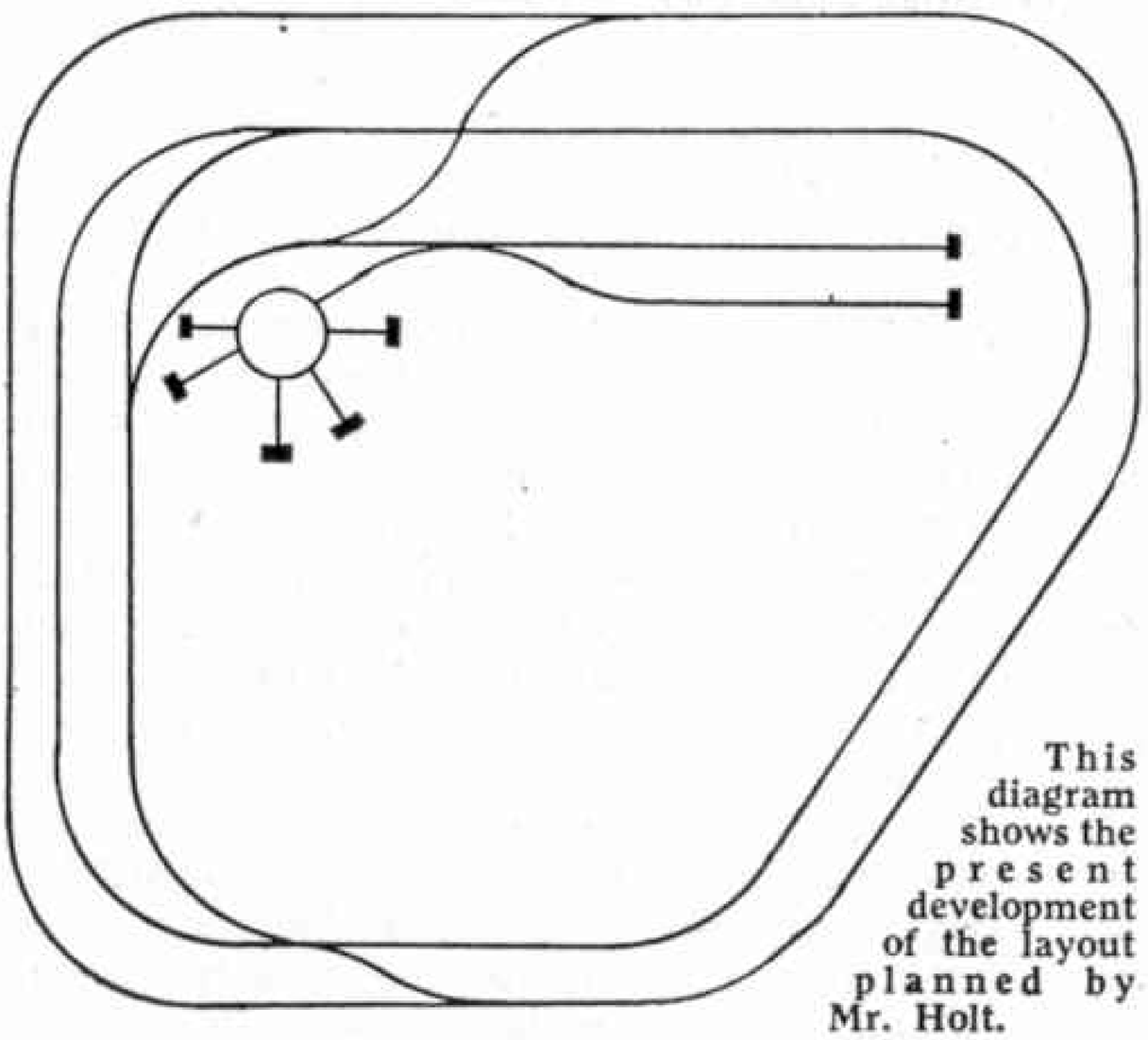
A view of the goods yard and depot with the passenger station beyond. Good use is made of Dinky Toys for road services.

A layout of this kind lends itself to a great deal of enjoyable running, and the extent of the track provided plenty of space for the Clockwork engine to show up to advantage. This applied particularly to a specially capable M1 locomotive, which developed a strong liking for the 2 ft. radius curves used on the system and the long straight stretches of track. Other engines in use included two 101 Tanks, and each of the engines took its turn on passenger and freight workings as required.

As with many other railways, the running of the trains did not form the only attraction afforded by the system, although no doubt it was the greatest one. The railway services were well backed up by road activities. For these, of course, Dinky Toys were used. I have already mentioned the roadway running across the operating space. No special surface could be provided for this because, as the illustrations show, the layout was arranged direct on the lino-covered floor. Some of you may think that linoleum does not form a realistic base for a railway. But after all, there is nothing much that you can do about it except be thankful that the floor is available, and that permission has been granted for its use!

However, let us get back to the roadway. This was marked out by the use of building blocks, the sort most youngsters have, which form quite effective boundary walls, and these same blocks also fenced in the station yard. The beauty of these things is that their position and arrangement can easily be altered to suit circumstances, or to carry out the new ideas that always strike the keen enthusiast.

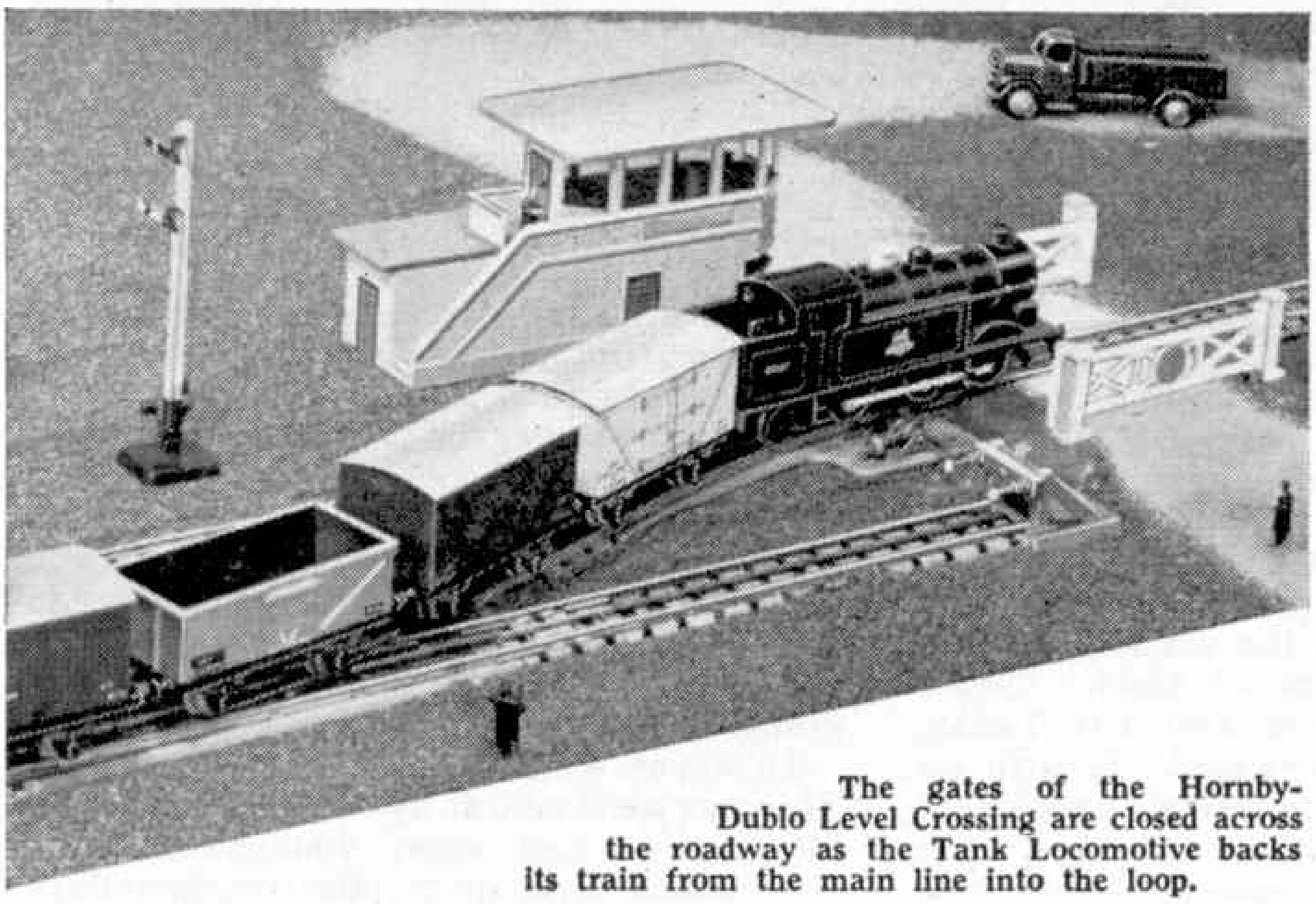
You will notice from both of the pictures that the goods yard was well provided for in the matter of crane power, the hand crane mounted on the Goods Platform being supplemented by the effective Goods Yard Crane, No. 752, that became available some time ago. With such equipment the transfer of loads of all kinds from road to rail and vice-versa is readily carried out. A Container, for instance, is in course of transfer in the upper picture on this page.



This diagram shows the present development of the layout planned by Mr. Holt.

"Building Up" the Railway

WE all know that it is great fun to develop a layout, and most Hornby-Dublo owners have some ideas on the way in which they intend to build up the track part of their railways so that the working of them becomes more realistic and attractive. Layout development in itself is an interesting aspect of miniature railway activity and it is probably correct to say that no good railway stays in exactly the same state for very long. There is always some addition to make, or some change to be carried out, as the result of experience in running.



The gates of the Hornby-Dublo Level Crossing are closed across the roadway as the Tank Locomotive backs its train from the main line into the loop.

While track layout development is important, what we may term the "building up" of the railway is important too. In this side of railway development there is a lot of interest and the arrangement of the various items that go with the track, such as stations, buildings and so on, can be tackled with the same enthusiasm that we give to layout problems.

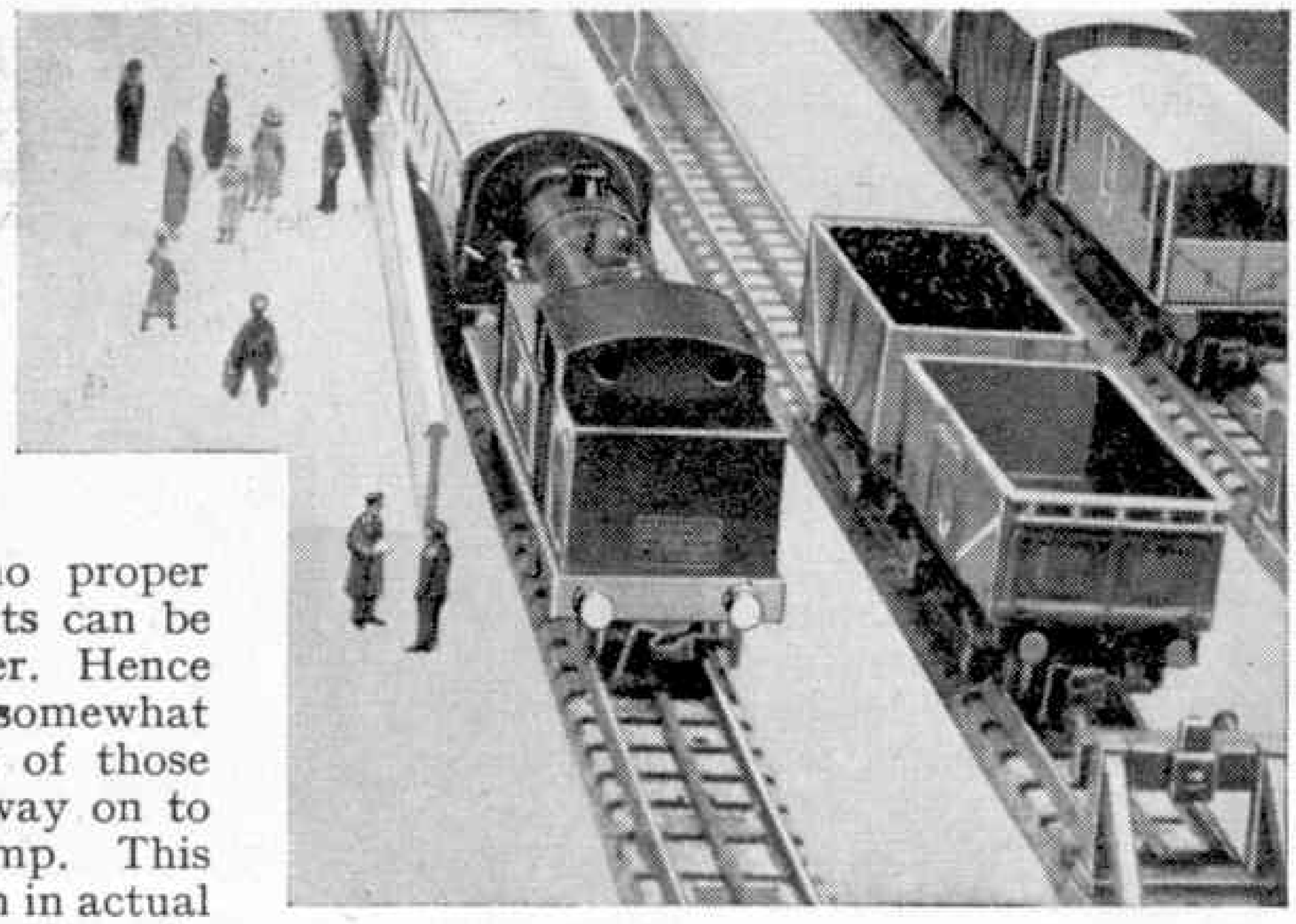
Stations of course are essential items and on various occasions we have spoken about their use and arrangements. The presence of a station implies the presence of a road, and this brings us to a subject that is being given more and more attention by Hornby-Dublo owners. A certain amount of road traffic must be visible in the neighbourhood of a station, and Dinky Toys as a rule are used successfully to create this. One very good reason for interest in road matters in the Hornby-Dublo system is the neat and attractive Level Crossing introduced last year. This is for single-track railways and it can be used very effectively at or near a station if convenient, or simply "out in the country."

An attractive Level Crossing scene is shown in the illustration on this page, where the presence of a Signal Cabin shows that the Level Crossing is placed near to a Station. The engine in the picture is backing its train off the running line into a loop, which you will notice is finished off with a short over-run or spur ending at Buffer Stops. The loop here gives access to sidings that are not shown in the picture.

A station set-up of this kind provides plenty of opportunity for the attractive placing of buildings and accessories, and for a great deal of realistic play with either rail or road traffic. The Signal Cabin is necessary for the control of train and road movement; but looking at it purely from the appearance point of view, think how empty the scene would look without it!

We have said previously how necessary stations are and of course every Hornby-Dublo owner endeavours to add at least one Station to his elementary layout as soon as possible. As the system grows up, and develops what we might term almost a character of its own, stations and other traffic premises are improved in layout or perhaps given some more definite purpose in the system.

It is not always possible to give as much space to station layouts as one would like, and modifications of what one may term the standard scheme have to be introduced. As an instance, the upper illustration

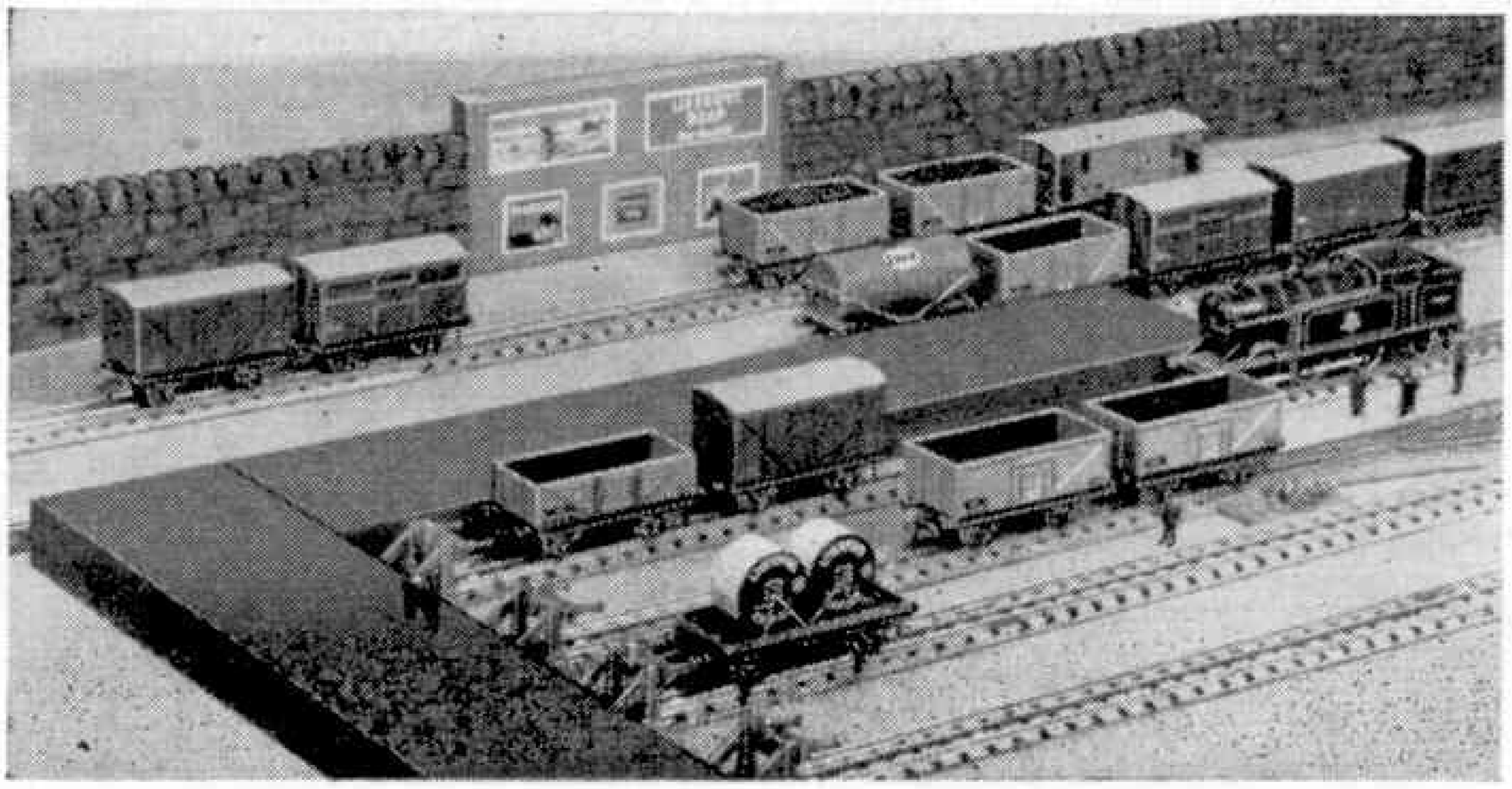


A branch line platform where passengers can enter the Station by means of the end ramp. The miniature figures make this scene "live," and they justify the arrival of the train.

on this page shows part of a station that is actually a branch terminus, with the rear of its building situated close to the edge of the baseboard. This being so, no proper station approach or road effects can be carried out in the usual manner. Hence the scheme of things is altered somewhat and the station becomes one of those where passengers make their way on to the platform up the end ramp. This situation is found now and again in actual practice, and its incorporation in miniature makes a pleasing and useful variation from the normal station scheme.

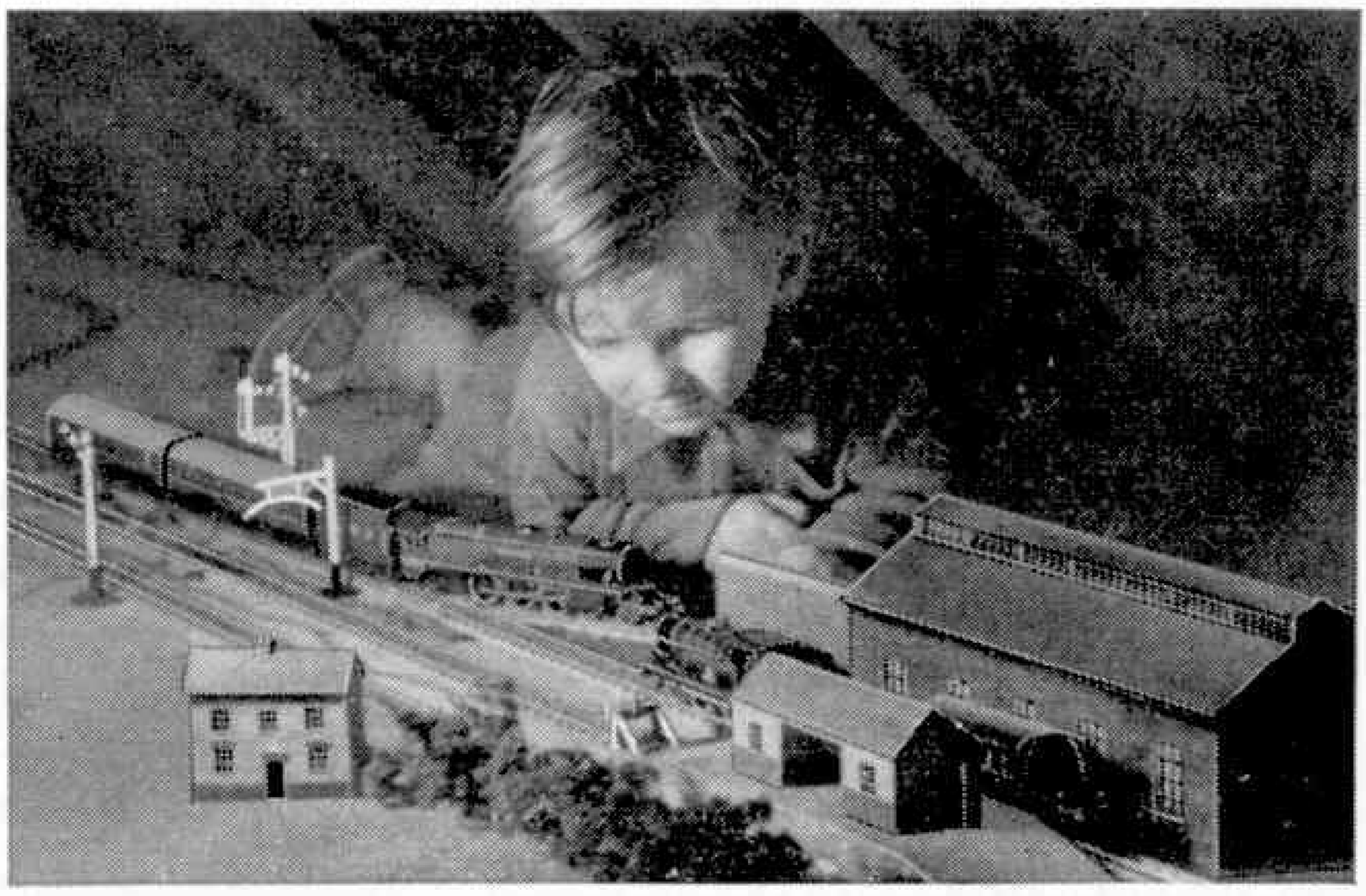
The arrangements for dealing with traffic are of interest. Crossover Points connect the platform arrival track with the next road and part of one set of these Points can just be seen to the right of the coach roof shown in our picture. When the arriving passengers have left the train, the engine pushes the Coaches clear of the Points and by means of an Uncoupling Rail strategically placed it becomes detached from the train. Back comes the engine again towards the Buffer Stops on its line. The latter are out of the picture because there is a fair length of track between them and the Points in case a tender engine should happen to arrive and require to run off from the train and back out along the next road. Not many do this as a rule, but the possibility should be allowed for.

Turning from the passenger to the goods side of things, there is practically no end to the variety that can be incorporated in a yard layout. The arrival track clear of the main running line usually fans out into a series of sidings. Something more elaborate is shown in our third illustration, for here the various roads run into a miniature depot with loading "banks" for both rail and road vehicles. A lot can be done in this direction on a miniature railway, and it will be noticed that the premises generally are backed on the far side by a wall, of the type of construction that has been described several times in these pages. Either cardboard or wood can be used for this type of work, and the same applies to the construction of the loading banks themselves. No special detail is required for the latter. Such items look most realistic when serving depot tracks and yard in this way, and provide an ideal setting for Dinky Toys goods vehicles using the depot.



The goods platforms and yard are enclosed by miniature walls. The latter represent stone construction, but like the platform they are actually made of wood.

The Hour-Glass Layout of Andrew Behrens



Andrew Behrens busy with his Hornby-Dublo layout, watching his Duchess of Atholl leaving the main line for the avoiding loop.

THE layout shown in the diagram on this page provides an interesting variation from the popular continuous oval. Its distinctive outline follows what may be described as the "hour-glass" or double-bulb shape. To a certain extent this has been influenced by peculiarities of the site on which the railway is laid.

Here we have a line that is literally in the roof of a house, a situation that allows plenty of length, but not a great deal of width, owing to the presence of the sloping roof. Actually a greater width of track could have been laid down, but nearly half of it would have been situated right under the lower slope of the roof. This would have been awkward from several points of view. The plan adopted has resulted in easier installation and maintenance, while it is possible for the operator, Andrew Behrens, whom you see in the illustration above, to make his way to the inner side of the track whenever he wants to.

The narrowing-in of the centre section of the layout connecting the two circular ends has the advantage that it gives the appearance of a double track length and is thus more realistic than a long straight stretch of single track would be. The actual spacing of the two tracks has made it possible for the station platform to be accommodated between them. In addition, a siding connected to each of the running tracks lies beyond the platform.

There is, as well, an avoiding line or loop that encloses the site of the engine shed. It provides a useful alternative route, or it can form a useful refuge for a train or locomotive that is to be overtaken by another train.

The main basis of the system has been a standard Hornby-Dublo Passenger Train Set and a Goods Train Set. Isolating arrangements allow of interesting traffic working, and the leads from the various sections have been connected up to Isolating Switches since the photograph above was taken. Until this was done switching in of a given section was carried out in the simplest way possible, but not one that can be recommended—by joining or disconnecting the appropriate wires!

For the purpose of the picture the hedge shown in the foreground was provided in an interesting manner. Sprigs of parsley were threaded through the holes in a Meccano Strip. This looked quite convincing for a while, as it does in the photograph—but the hedge soon wilted and had to be removed!

All told, Andrew has quite a good railway that gives him endless fun. He follows the *M.M.* with keen interest although he cannot yet read it.

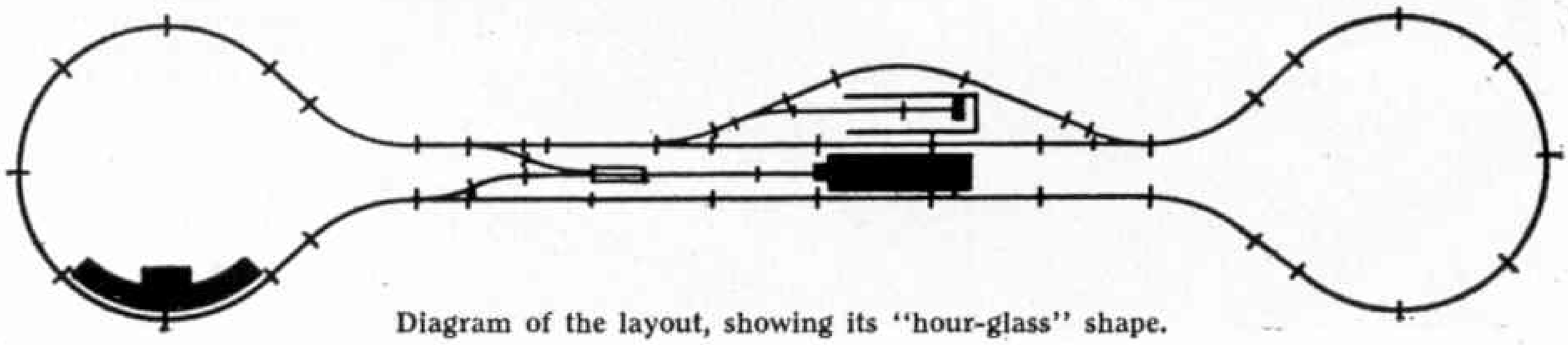


Diagram of the layout, showing its "hour-glass" shape.

Club and Branch News

WITH THE SECRETARY

SUMMER FUN AND WINTER MODEL-BUILDING

During these Summer months cycling runs, rambles, visits to nearby holiday resorts and other places of interest figure largely in the Club programme. Members should always bear in mind the model-building activities that will come back into their own in the Autumn, and be ever on the alert for anything that would make a good subject for a Meccano model.

When they come across anything that they consider suitable, they should make a few notes about it and if possible some rough sketches—no good rambler or excursionist ever goes about without a notebook and pencil in his pocket! He should send his suggestion and sketches to the Leader, so that at the end of the Summer ideas received from members in this way can be considered collectively, perhaps at a special Model-Planning meeting, and if found practicable, incorporated in the programme for next Winter.

Model-building schemes of this kind have a double interest, and are just the thing for encouraging originality. And their beginnings do not interfere with the enjoyment of Summer outings.

MECCANO CLUB RECENTLY AFFILIATED

LAUNCESTON M.C.—Mr. B. Tunbridge, Kensey Veau, Launceston, Cornwall.

CLUB NOTES

LEADGATE AND DISTRICT M.C.—An excellent new Club room has been acquired, around the walls of which members have been busy making and fixing in position an 18 in. wide bench on which a large Hornby layout, already designed, will be put down. Meccano model-building has not been neglected, and some interesting models have been completed. Club roll: 10. *Secretary:* J. Norman Barron, 4 Garden Place, Leadgate, Consett, Co. Durham.

SMITHFIELD (ABERDEEN) M.C.—A recent Parents' Night was a great success, and models built for the occasion were greatly admired by the visitors. The Club have been asked to build a Meccano model for the Aberdeen Youth Services Handicrafts Exhibition, and after discussion the members decided that it should be a model of a Dutch Windmill. Club roll: 15. *Leader and Secretary:* Mr. G. Hart, 16 Lintmill Terrace, Aberdeen.

COLLEGIANS (CORK) M.C.—Preparations for an Exhibition have been the main activity. The Exhibition will include an excellent Dinky Toys display, as last year. Club roll: 26. *Secretary:* F. O'Flynn, "The Gables," St. Patricks Hill, Cork, Eire.

John A. Kirby is Secretary of the Kentish Town (London) Branch No. 548. Chairman, Mr. A. Edwards. This very progressive Branch was incorporated with the H.R.C. in November last year. It carries out an attractive programme of railway operations on a Branch layout that is continually being developed, a policy that ensures the interest of members being well maintained.

HOLLAND

NIJMEGEN M.C.—The recent Exhibition, held on two days, was a great success. The splendid variety of models on display included a robot built by a 14-yr. old boy, a fairground, transporter bridge and a dredger. A model train and tramway demonstrated by Mr. van Brienen was a great attraction. *Secretary:* J. Geurts, Hatertseweg 241, Nijmegen, Holland.

BRANCH NEWS

NEWPORT (I.O.W.) CHURCH OF ENGLAND BOYS' SCHOOL.—This recently incorporated Branch is making excellent progress. Enthusiasm is keen and meetings are well attended. On Track Nights members are divided into two groups, one carrying out signal operations and the other having talks on electrical devices concerned with railway working. Plans are in hand for visits to places of interest. *Secretary:* G. Donne, Newport C.E. Boys' School, West Street, Newport, I.O.W.

WATERLOO (DUBLIN)—Steady progress continues to be made and Electrically Operated Points are gradually superseding the hand-worked type. A recent quarterly check of equipment showed that motive power on the Branch layout consists of six locomotives and six miniature railcars. Freight traffic is heavy, hence the stock of 39 wagons and 11 lorries for associated road motor services. The occasional working of Oil Tank Wagons over the system calls for slightly revised operating arrangements. These were set out recently in a special notice that is typical of many prepared for the guidance of operators. *Secretary:* S. J. Carse, 38 Oakley Road, Ranelagh, Dublin, Eire.

AVIARY (LEEDS)—More members have been enrolled, and there is now a waiting list. The Branch is now comfortably settled in new quarters. Funds for the purchase of equipment for a new Hornby-Dublo layout are being accumulated, and model-making in connection with this layout is in hand. Mr. Myers, the Chairman, gave a most interesting talk on *Life Aboard a Sailing Ship*, during which the younger members were thrilled to hear of his experiences when, as a young man, he served for several years "before the mast". *Secretary:* L. Blakey, 21 Arley Street, Armley, Leeds 12.

HINDHEAD AND DISTRICT—The construction of a footbridge kept members busy at a recent meeting, and on another occasion an interesting discussion was held on new Hornby-Dublo products and M0 layout designing. New members will be welcomed. *Secretary:* B. J. Hinde, "Hindhead Brae," Hindhead, Surrey.

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WRIGHT'S STAMP SHOP (M56), PALACE STREET, CANTERBURY, KENT

For other Stamp Advertisements see also pages 304 and xviii.

Stamp Collectors' Corner

By F. E. Metcalfe

THE QUEEN'S STAMPS

IT will be remembered that a month or two ago the question of a Queen Elizabeth collection was discussed. Many readers then wrote to say that it was all very well to talk about a Queen Elizabeth collection, but how were they to know what stamps existed, etc.? In other words, what about a catalogue? I am glad to say that a Commonwealth catalogue is appearing, devoted entirely to the issues of our present Queen, at 3/6, a price within the reach of all would-be collectors. Queen Elizabeth catalogues have already been published in Germany and Switzerland, and one is coming out in sections in the U.S.A. Now that Great Britain is to have her own it is likely to become the standard.

Whether to collect QE stamps mint or used still seems to worry many would-be collectors. I will try once and for all to settle that very debatable point. First of all, how do you prefer your stamps? If you like them mint, well, what are you waiting for? If you prefer them used, the same applies. But the queries obviously come mostly from those who have no marked leaning, and to these I would say, if you are indifferent whether you take used or mint, then collect the latter.

Why? Well, there are several reasons. First of all, so many colonial stamps are issued by small colonies that there are not enough used stamps to go round, so dealers have to get stamps postmarked to order. This means that many of the stamps have never done any postal duty, and so are not really what they purport to be. They are accepted, generally speaking, but after all, the only logical reason why one collects used stamps is because they are supposed to have done their job. It is safe to say, however, that most of the used colonial stamps on sale, with the exception of those belonging to the larger colonies, such as Nigeria, etc., have never done any more postal service than their mint fellows. So why have stamps defaced in this way in your collection?

Another reason why mint are to be preferred is that many of the designs are so beautiful, that it is really a shame to smudge them all over with ink. Just take that wonderful set of ship stamps, recently released for the Falkland Dependencies. Who wants to mar the fine pictures of those romantic ships, with postmarks that in a sense are not really postmarks at all?

One advantage of forming a QE collection is that it will have a relatively high resale value, compared with that of a collection formed from packet stamps, etc. It will not matter much whether your collection is of used or mint stamps, providing of course that you have taken care of your stamps and have mounted them, particularly the mint stamps, very carefully. But mint stamps have another advantage. From time to time, new printings of current stamps are made, and supplies of these are released in London by the Crown Agents to approved stamp dealers. Now the latter study these printings very carefully, and quite often nice shade varieties are to be found. If these are distinct enough to merit separate listing, they will be included in future editions of the Commonwealth Catalogue. Well, you will always be able to get these mint, but a lot will be missed used, for unlike the Crown Agents in London, the Colonial Postmasters do not say when these new printings will be placed on sale, and so dealers may never get stock used.

There is the all-important question of an album. I have mentioned this before, but it is well worth referring to again. Do *not* go in for an album that has the spaces marked out. Not only does it take far too long for leaves to come out with those spaces, but even when you get these leaves, you are tied down to the stamps for which there are spaces, and all too often you will find that there is no square marked out for a shade of some variety that takes your eye, and which you want to place in your collection. Remember that nothing looks more untidy than stamps mounted outside, so be sure to get a plain loose leaf album. You should be able to get a quite nice one for a shilling or two under a pound. If you want to make a real splash, well, you can spend up to a fiver, but just one pound should be ample for the average collector.

Most of the leading album publishers have a satisfactory range. For an economical album I think the Prangnell Vicking at 19/3 and Merton at 26/6 are worth noting. If you want something really classy, Gibbon's Plymouth at 65/6 will suit. Just as important as anything else, is—dare I say it—a clean pair of hands. Don't mount your stamps after you have been digging in the garden, or oiling your bike. A packet of good stamp mounts also is wanted. During the war, it must be admitted that British mounts were poor, to say the least of it, but now they are all right.

When mounting the stamps, arrange them in a nice pattern to your liking, first checking with your catalogue to find out if there are any stamps that are not in your current set. If so, leave spaces for these missing stamps, so that when you obtain them eventually you can insert them without having to re-arrange the stamps already mounted.

Next month we'll see how we can join a new issue service, etc. In the meanwhile see your dealer about that album.

SWISS STAGECOACH FREE

Absolutely Free. To all who ask to see a Selection of Windsor stamps on Approval, we will send absolutely free this super **SWISS** stamp (printed in yellow, violet and grey) depicting a **Mail-coach drawn by Five Horses.** Dated 1849/1949 it was issued to commemorate 100 years of the Swiss Post.

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FREE 15 ZOO! stamps.

with a set of Fantastic Fishes from **SPANISH SAHARA,** also Tree Climbing Kangaroo, Rhinoceros, Leopard, Zebu, and many others. Be one of the first to have the new stamps in this smashing packet. **ABSOLUTELY FREE!** Just send 2½d. postage and ask to see our popular Sterling Discount Approvals, including Triangulars from 1d. each.

STERLING STAMP SERVICE (Dept. MMY), Lancing, Sussex

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These stamps **SELL**—good discount is given—and you will be pleased with each selection you receive.

For **GOOD** collecting write **NOW** to:

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THIS MONTH ALL GENUINE APPROVAL APPLICANTS WILL RECEIVE FREE THE 1953 NEW ZEALAND HEALTH SET SHOWING GIRL GUIDES AND BOY SCOUTS. SEND 2½d. FOR POSTAGE AND REQUEST APPROVALS.

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West Kirby, Wirral

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38 Queen's Avenue, Whetstone, N.20

regrets that illness has prevented carrying on business, but correspondence will be attended to as soon as possible.

MODERN UNSORTED LOTS on paper. All contain large Pictorials! Gt. Britain with Coronation, 1 lb. (3,000) 5/–, 2 lb. 9/6. Br. Empire with Coronation and Q.E., 1 lb. 25/–, ½ lb. 13/–, 4 oz. 7/–. Australia with latest Q.E. and Coronation, 1 lb. 13/-, ¼ lb. 7/-, 4 oz. 3/9 (abrd. 1/– lb. ex.)

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24 Catherine St., SHEFFIELD 3. *Shop:* **346 Abbeydale Rd.**

For other Stamp Advertisements see also pages 302 and xviii.

Stamp Gossip

CANADA

ON 1st April collectors got a treat from Canada—the second National Wildlife set and the first of the new Queen Elizabeth stamps. I suppose that each year a similar wildlife set can be expected, and so Canada looks like adding some delightful pages to one's collection. The Queen Elizabeth stamp is the 5c. The portrait is new, adapted from a photograph by Dorothy Wilding. The 1c., 2c., 3c and 4c. values of the same design will appear in due course, and all will be overprinted G for official use.

The reason why Canada has issued another Queen Elizabeth set so soon is because the portrait of the first set was not thought to do justice to the Queen. Let us hope that all will be satisfied now.

Incidentally the 15c. stamp illustrated, showing a gannet, does not belong to the National Wildlife issue. It is merely a new value of the definitive set, and it also was issued on 1st April.

FIJI HEALTH STAMPS

Last year Fiji brought out a pair of stamps that had a small surcharge to be applied for Health purposes in Fiji. I am afraid that the issue was not entirely successful, for quite a lot of the stamps had to be destroyed. Yet no purpose could have been more worthy, for the funds gathered from the issue were to be applied for the benefit of Fijian troops who contracted tuberculosis and other diseases while fighting overseas for *us*. They are in urgent need of every penny we provide to help brighten their lives.

Now another set has been issued, consisting once more of two stamps. The surcharge on each is only ½d., and with a total face value of 5d., a set is within reach of every collector. Don't forget to buy one of each this year, or better still blocks of four, and in return for a few coppers you will get two really delightful stamps. One is illustrated. It shows a river scene in Fiji, with a bamboo raft, of the type used for transporting fruit, etc. Don't forget that one day these stamps may be worth a good bit more than their cost while current. Just look at the prices of early New Zealand Health stamps.

THE U.S.A.

A country that produces many commemorative stamps, of low face value and easily obtainable, cannot help but be popular with young collectors, and this is certainly the case with the United States. Not all these commemorative stamps are the last word in artistry. To be quite honest some are pretty moderate, and many have been the complaints showered on the U.S. Post Office Authorities by our cousins. Now it would seem that something is being done about the ordinary stamps, for an 8c. has appeared in two colours, and it must be admitted that it is an improvement on the stamp it replaces. Perhaps the commemoratives will receive attention later on, if this experiment is a success.

SPORT

Some time ago a collector remarked that he had seen no stamp depicting the gentle art of fishing with line and rod, as distinct from tough fishing for big fish. Evidently he had not seen the 5 pesetas stamp of Spanish Morocco, which is illustrated, for although the three fishermen are by the side of the sea, they seem to be taking things as calmly as though they were alongside one of our rivers.

Several collectors have written saying that they are interested in a collection of subjects, but that they have been told that used stamps are out of place in such a collection. This is nonsense, but care must be taken to see that the postmark does not obliterate an important part of the design. If this is done, used are quite as suitable as mint.

VIKINGS

That is a word that stirs us all. What pictures of an heroic past are conjured up when we hear it! Maybe our ancestors thought differently, but as they are not here to tell us the truth, we can go on with our day dreams. All this being the case, any postage stamps on the subject are always welcome, which is the reason why the two stamps issued a few months ago by Denmark to commemorate a thousand years of Danish History are so interesting.

The design of the stamp illustrated depicts what at first glance looks like a fireman's blanket, but actually it is supposed to be a picture of a Vikings' Camp at Trelleborg in Zealand, 60 miles south-west of beautiful Copenhagen. The main outer fort can be seen, and inside this ring will be noted regular lines denoting barrack buildings.

Quite an interesting little stamp, and one that can be bought used for a couple of coppers. That is the beauty of Danish stamps. The Postal Administration of Denmark issues from time to time nice little sets of stamps, most of which are readily obtainable cheaply, and not only can a collection of modern Danish stamps be gathered for a relatively small sum, but such a collection is indeed well worth forming.

There are of course here at home some very fine Danish collections, for these stamps have always been very popular in Britain, but any young collector, not overburdened with cash, who wants a worth-while country to collect, let him consider the twentieth century stamps of our old friends the Danes.

A TIP

Collectors of British colonial stamps will remember that in May of last year, Northern and Southern Rhodesia and Nyasaland all issued a 6d. violet stamp to commemorate the Rhodes Centenary Exhibition. Now those stamps can be purchased for about a shilling each. They will cost several shillings one day.

On the Road—(*Continued from page 279*)

been doing the run every year since well before the war, and has had many gold medals. Those old Trojans, of course, pulled like packhorses.

During that Easter week-end, there were road-race meets at Brands Hatch and Crystal Palace, and spectators saw some fine riding, especially on the part of young John Surtees, "Old" Eric Oliver—may he forgive me, and he is not a day older than I am, if anybody cares to make anything out of that!—and Cyril Smith. I could not get to those meetings, but I went to a popular and very pleasant grass-track meeting run by a club in Surrey, and revelled in the odour of racing oil, and the crisp music of open exhausts.

Behind the Scenes—(*Continued from page 288*)

pits and is illuminated at night. At Berne, where the Swiss Grand Prix takes place, the laps completed by each car are shown on a giant thermometer.

Course commentators are located at several vantage points around the circuit, and dovetail their reports in such a way that a commentator is "with" the cars from start to finish of each lap. There are times when the commentators cannot be heard, however, usually when something really interesting is being reported, due to the fact that no loudspeaker on any race track can compete with the B.R.M.s or a pack of 500s in full cry!

Well—next time you go motor-racing spare a thought for the men (and women) behind the scenes. Many of them are unpaid volunteers and some of them—because of their duties—are never able to watch a race. Motor-racing in this country—more popular than ever this year—owes the Back Room Boys a hearty "Thank You."

New Meccano Model—(*Continued from page 295*)

to Angle Brackets fixed to the sides of the body and to the $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate of the tail.

The completed body is fixed by nuts on the ends of the Bolts 13 and 14, and the $5\frac{1}{2}''$ Strips that form the rear bumper are held by nuts on the Bolts 14.

The steering column is a $6\frac{1}{2}''$ Rod supported in the dashboard, and it carries a $\frac{1}{2}''$ Pinion that engages the Contrate 11. The lower end of the Rod is mounted in the Angle Bracket previously mentioned as at right angles to the Angle Bracket that supports the Contrate 11. The $6\frac{1}{2}''$ Rod is held in position by a Collar located against the dashboard.

Parts required to build the Open Car: 6 of No. 1; 13 of No. 2; 3 of No. 2a; 4 of No. 3; 4 of No. 4; 13 of No. 5; 3 of No. 6; 10 of No. 6a; 1 of No. 9b; 20 of No. 10; 32 of No. 12; 3 of No. 12c; 1 of No. 14; 2 of No. 16; 1 of No. 16a; 2 of No. 16b; 3 of No. 17; 4 of No. 18a; 3 of No. 18b; 2 of No. 20; 4 of No. 20a; 1 of No. 22; 2 of No. 22a; 1 of No. 24; 4 of No. 25; 5 of No. 26; 1 of No. 27a; 2 of No. 28; 237 of No. 37a; 225 of No. 37b; 37 of No. 38; 7 of No. 48a; 1 of No. 50; 13 of No. 59; 1 of No. 62; 2 of No. 62b; 5 of No. 63; 2 of No. 77; 4 of No. 89a; 1 of No. 89b; 4 of No. 90; 2 of No. 90a; 1 of No. 111a; 3 of No. 111c; 2 of No. 111d; 4 of No. 114; 2 of No. 115; 1 of No. 120b; 4 of No. 124; 4 of No. 126a; 1 of No. 128; 1 of No. 140; 4 of No. 142a; 2 of No. 147a; 1 of No. 155; 2 of No. 161; 1 of No. 185; 2 of No. 187a; 11 of No. 188; 3 of No. 189; 6 of No. 190; 11 of No. 191; 1 of No. 192; 2 of No. 200; 2 of No. 212; 2 of No. 214; 8 of No. 215; 1 E20R Electric Motor.

NATIONAL TRACTION ENGINE RALLY

Readers who are traction engine enthusiasts will be interested to learn that a National Traction Engine Rally will be held on Saturday, 12th June, at Bridge Farm, Appleford, near Abingdon, Berkshire. The Rally has been organised by The National Traction Engine and Tractor Association Incorporated, and will be open to the general public from 2.30 p.m. Many enthusiasts, however, are certain to want to have a closer look at the engines, and perhaps to take

This striking Meccano fancy dress and Royal crown won First Prize for Master Spottiswoode, of Egremont, Cumberland, in a local competition last year.

photographs as well, and for their benefit admission to the Rally will be possible from 10.30 a.m. onwards. For this purpose, a special Admission ticket will be available for which a nominal charge may be made.

Further information and an entry form can be obtained from the Secretary, N.T.E. & T.A., Duke Street Chambers, Duke Street, Reading, Berkshire.

This Month's Special Articles

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From Our Readers

This page is reserved for articles from our readers. Contributions not exceeding 500 words in length are invited on any subject of which the writer has special knowledge or experience. These should be written neatly on one side of the paper only, and should be accompanied if possible by original photographs for use as illustrations. Articles published will be paid for. Statements in articles submitted are accepted as being sent in good faith, but the Editor takes no responsibility for their accuracy.

MORETON OLD HALL

Moreton Old Hall is perhaps one of the best preserved of all Tudor houses in the country. It has undergone little rebuilding at all.

The Hall is situated in Cheshire, about a mile away from the village of Astbury, famous for its church. It stands well back from the road and the patterned black and white Elizabethan building looks as fresh and clean as ever.

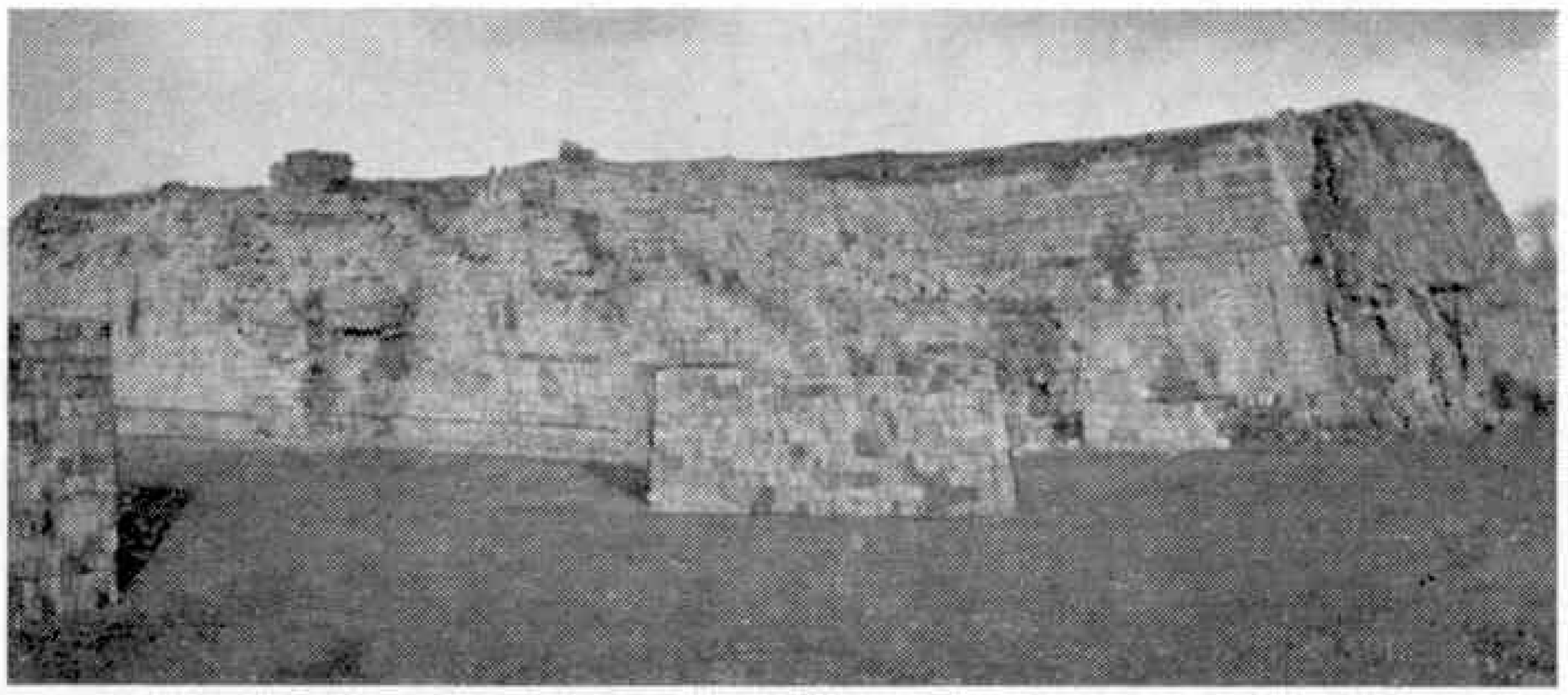
It is something of a shock to walk directly from a 20th century main road into a 16th century Manor House. Yet this is what happens as visitors pass through the gatehouse of Moreton Old Hall. As they walk into the cobbled courtyard the first thing to fix their gaze is the sight of two magnificent bay windows, which stand as a glorious monument to Richard Dale, their designer. His inscription is marked on them:

Richard Dale, Carpenter made
thies by the grace of God.

The building is given a delicate picture book quality by the contrasting exterior of black and white. One can only wonder at the skill of the workmen who built a structure to last over three centuries. A typical feature of the 16th century house design is the long gallery. This was added later, however, and is now in such a rickety condition that it has necessitated the rebuilding of brick buttresses at one end to support it. Also of interest is the cramped and twisted staircase. The moat too catches the eye. At one time it was crossed by means of a drawbridge, but this attractive feature of many castles and old houses has now been replaced by a modern brick and concrete structure, easy to walk upon, but not as romantic as its predecessor.

As I left the Old Hall to return to the Potteries, I was left in doubt as to which of these two worlds is to be preferred.

GEOFFREY K. SMITH (Tunstall).



A giant clamp of bricks for firing with breeze, a process that is hundreds of years old and is still used as described in the accompanying article, in many parts of Southern England. Photograph by G. H. Wagstaff, Southend-on-Sea.

FIRING BRICKS IN CLAMPS

In this process no coal or other recognised form of fuel is used. The burning is accomplished entirely by the use of household ash. This is sifted when received by the brick manufacturer. When forming the bricks the resulting fine ash is mixed proportionately with the clay and thus becomes a part of each "green" or unfired brick. After drying, the bricks are formed into clamps, being set solid except at the bottom of the clamp, where old bricks are set on edge to provide a series of flues. Over these is spread a layer of cinders, known to the brickmaker as "breeze". This breeze consists of the larger screenings obtained when the ash is sifted.

Connected to the layer of breeze are one or two rows of chopped wood, which lead to positions on the outside walls of the clamp. It is here that with the aid of a little straw and a box of matches the clamp is fired. The fire travels via the rows of wood to the layer of breeze. This ignites, and in turn sets the bricks alight. The result is the ignition of the entire clamp, apart of course from the layers of old bricks used as a protective covering at the top and sides of the clamp.

The fire travels from end to end of the kiln in a matter of weeks. It is possible to stand on top of the clamps alight, and to look down through the cracks of the casing bricks to the near white hot mass below.

G. H. WAGSTAFF (Southend-on-Sea).

A fine general view of Moreton Old Hall, a famous timbered Tudor house in Cheshire. It possessed a moat and is in a remarkably good state of preservation. The picture shows the buildings in the rear as well as the main block. Photograph by Geoffrey K. Smith, Tunstall.

Competitions! Open To All Readers

Prize-winning entries in M.M. competitions become the property of Meccano Ltd. Unsuccessful entries in photographic, drawing and similar contests will be returned if suitable stamped addressed envelopes or wrappers are enclosed with them.

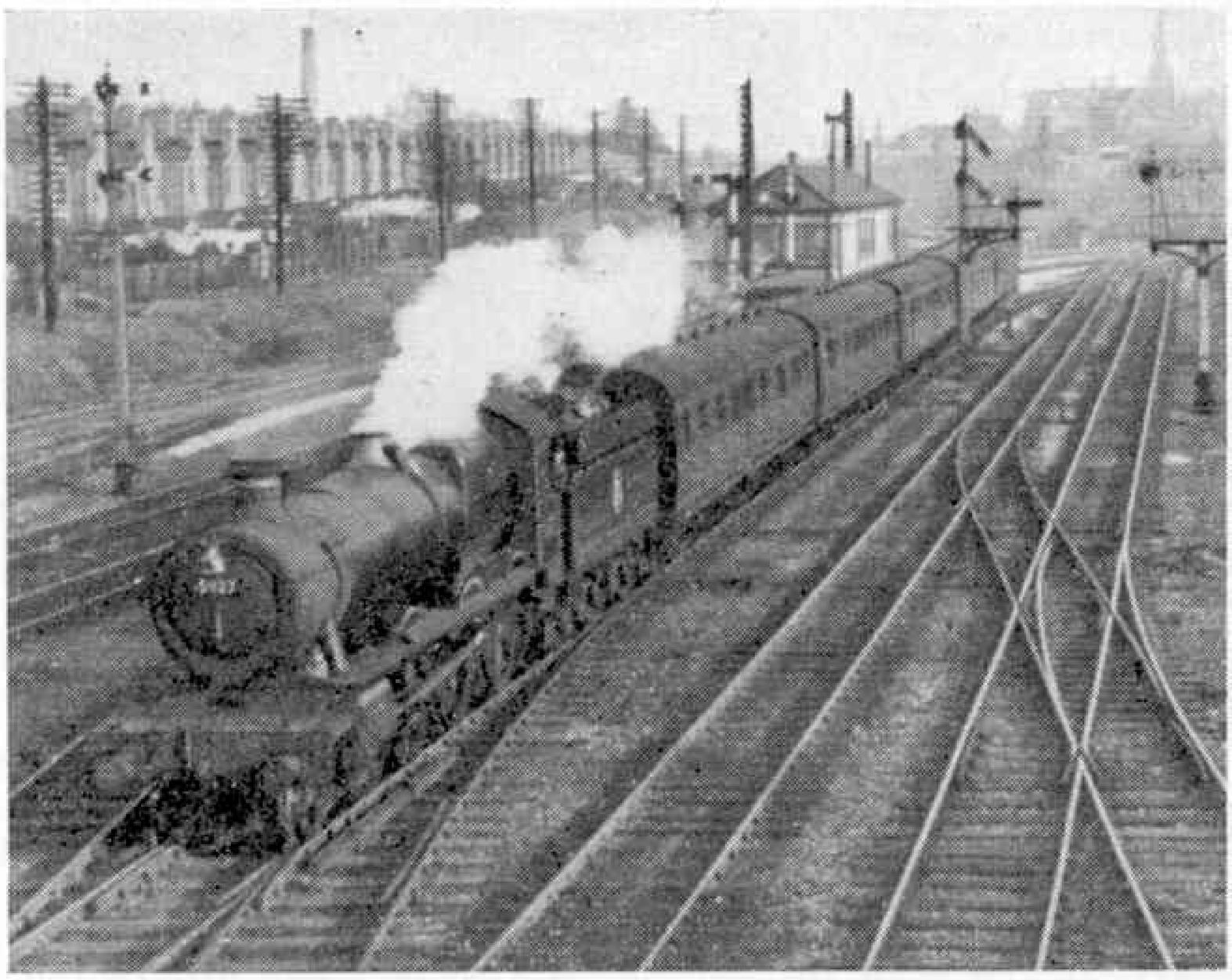
Films that I like Best

In spite of television the cinema continues to be one of the most popular forms of indoor entertainment in the world, and I expect that most *M.M.* readers go "to the pictures" at least once a week. Just as people who are fond of books in time develop a preference for certain types of stories or non-fiction works, so the regular cinemagoer comes to like and enjoy certain types of films more than others.

Various factors, apart from the films themselves, play a part in developing such preferences. A love of Nature, for instance, helps to foster a preference for films with a country setting in which animals and creatures of the wild are featured. *My Friend Flicka*, surely one of the best films of outdoor life ever produced, is a good example of this sort of film.

I would like to know something of *M.M.* readers' preferences in the matter of films, and so in this competition I invite them to write and tell me the types of films they like best, and especially *why* they prefer them.

Letters should not be more than 500 words in length, and should be written on one side of the paper only, the competitor's name, age and address being given on the other side. To the senders of the three best entries I will give prizes of 21/–, 15/– and 10/6 respectively, and consolation prizes for other good efforts. A similar set of awards will be given for Overseas entries. Letters should be addressed to *The Editor, Meccano Magazine, Binns Road, Liverpool 13*, and should be marked in the top left corner *June Film Contest*. The closing dates are: Home Section, 31st July; Overseas Section, 31st October.



Hall class 4-6-0 No. 5927 "Guild Hall" entering Tyseley Junction with the 2.33 p.m. Leamington to Birmingham (Snow Hill) train. This excellent photograph by R. Shenton, Shirley, nr. Birmingham, was awarded First Prize in Section B of the March 1954 Railway Photographic Competition.

Do You Know These?

In our second competition this month readers are asked to identify the cars or commercial vehicles associated with the following slogans or descriptions that are to be seen regularly in advertisements:

1. Knight of the road
2. Always on the job
3. Out of pedigree comes pace
4. Grace—space—pace
5. All that's best from Britain
6. For the highways and byways of the world
7. In every sphere of industry . . . . . runs to schedule
8. The world's best oil-engined lorries
9. Spacious—powerful—economical
10. So fast, so elegant—so comfortable
11. Buy wisely buy . . . . . .
12. Britain's most versatile vehicle

Send your entries in, on postcards, in the form of a numbered list, and address them *Motor Slogan Contest, Meccano Magazine, Binns Road, Liverpool 13.* The closing date in the Home Section is 31st July and in the Overseas Section, 31st October, and in each Section there will be prizes of 21/–, 15/– and 10/6 for the best entries.

Competition Results and Solutions

HOME

JANUARY 1954 COVER VOTING CONTEST

1st Prize: J. R. Frankel, Compton, nr. Newbury. 2nd Prize: T. Crisp, Ipswich. 3rd Prize: G. J. Young, Sanderstead. Consolation Prizes: W. R. Tandis, Coleford; P. Bedford, Dewsbury; R. Stephens, Barnstaple; M. Leon, London S.W.7; P. R. Strangeways, Faringdon; J. W. Dutton, Wallasey; D. Lewis, Portsmouth.

JANUARY 1954 DRAWING CONTEST

1st Prize: V. Corasi, Harrogate. 2nd Prize: M. J. Edwards, Wootton Bassett. 3rd Prize: S. Carpenter, Chesterfield. Consolation Prizes: P. Bainbridge, Chatham; E. G. Burrows, Gosport; R. R. Marsh, Ulverston.

FEBRUARY 1954 LOCOMOTIVE SHADOWS

1st Prize: P. Clements-Jewery, Romford. 2nd Prize: J. Adderley, Marple. 3rd Prize: C. Walker, Dewsbury. Consolation Prizes: D. Parkinson, Stockport; N. Brown, Wakefield; D. J. Maidment, East Molesey.

FEBRUARY 1954 DRAWING CONTEST

1st Prize, Section A: 4130258, L.A.C. Burnett, Netheravon; Section B: M. Dunnett, Chester-le-Street. 2nd Prize, Section A: R. Thomas, Brighton 6; Section B: D. W. Segens, Harleston. 3rd Prize, Section A: T. Mepham, Manchester; Section B: P. Reading, Coventry. Consolation Prizes, Section A: R. B. Blackburn, London S.W.19; J. M. Hearne, Torquay; R. Purvis, Colchester; R. Sanderson, Sheffield 10; D. M. J. Turner, Paignton; Section B: D. Pendleton, Liverpool; I. G. Holt, Rochdale; D. Sullivan, Hereford; H. Rose, Leeds 8.

MARCH 1954 PHOTOGRAPHIC CONTEST

1st Prize, Section A: R. K. Evans, Hessle; Section B: R. G. Shenton, Shirley. 2nd Prize, Section A: H. Hill, Blackpool; Section B: A. D. Parkes, Oxford. 3rd Prize, Section A: P. Browning, Edinburgh; Section B: P. Ellis, Accrington. Consolation Prizes: J. J. Cunningham, Edinburgh 3; G. Ogilvie, Edinburgh 4; H. B. Lock, Birmingham 22A; Michael Wilson, Bridlington; J. E. Turley, Tunbridge Wells; L. Stone, Leeds 7; R. Ross, Glasgow S.W.1; C. B. Brown, Todmorden; S. C. Reynolds, Lowestoft; J.C. Jobling, Stockton-on-Tees; J. S. Swanson, Edinburgh 11; P. Mearns, Colchester.

OVERSEAS

OCTOBER 1953 LOCOMOTIVE CONTEST

1st Prize: K. R. Cassells, Tawa Flat, N.Z. 2nd Prize: G. A. Marsland, Adelaide, S. Australia. 3rd Prize: G. N. Eames, Dundrum, Eire. Consolation Prizes: M. C. Smith, Auckland W.3, N.Z.; A. Christopher, South Perth, W. Australia; P. Jonathan, Canberra, Australia; T. Shanklin, Cape Town, S. Africa.

OCTOBER 1953 SHIP DRAWING CONTEST

1st Prize, Section A: M. Adler, Cape Town, S. Africa; Section B: C. Parr, North Canterbury, N.Z. 2nd Prize, Section A: P. J. Marais, Wynberg, C.P., S. Africa; Section B: N. Cudby, Wellington, N.Z. 3rd Prize, Section A: J. Chorley, Adelaide, Australia; Section B: B. J. V. Johnson, Eltham, Vic., Australia. Consolation Prizes: L. M. Robinson, Wellington, N.Z.; F. S. Box, Dublin, Eire; J. Jackson, Cape Town, S. Africa; C. J. Clarke, Nairobi, Kenya.

NOVEMBER 1953 PHOTOGRAPHIC CONTEST

1st Prize, Section A: T. S. Messenger, Dublin, Eire; Section B: S. Thomas, Melbourne, Australia. 2nd Prize, Section A: I. Johnstone, Wellington, N.Z.; Section B: T. Potts, Invercargill, N.Z. 3rd Prize, Section A: H. Watson, Rathfarnham, Eire; Section B: A. Clifford, Montreal, Canada. Consolation Prizes: A. D. Mair, Christchurch, N.Z.; A. Manning, Cork, Eire; Miss M. Heath, Durbanville, S. Africa; J. Young, Waterford, Eire.

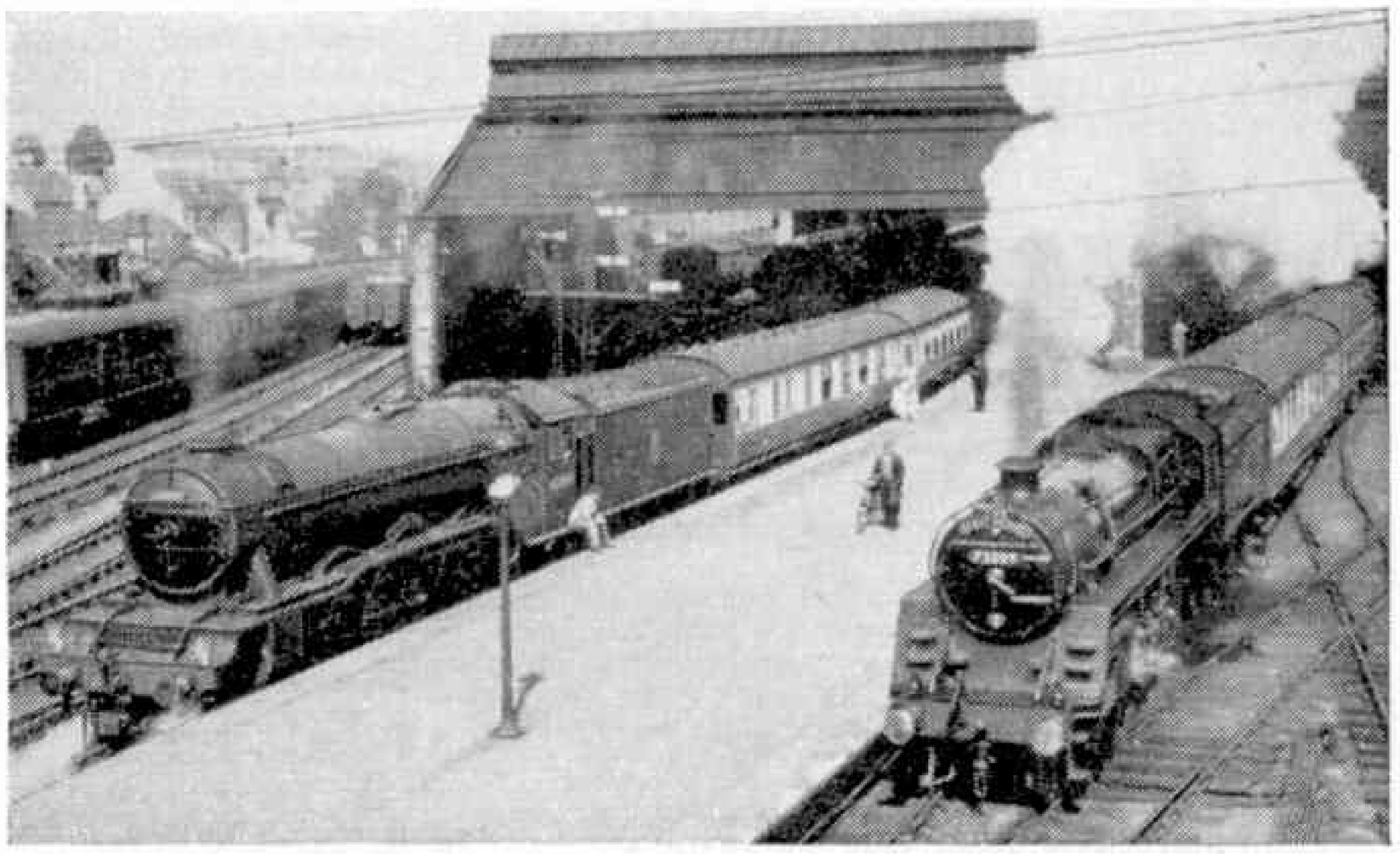
SOLUTIONS

NOVEMBER 1953 CROSSWORD PUZZLE

Across: 1, Apostate. 8, Haul. 11, Seine. 12, Optics. 14, Saline. 16, Orphan. 18, An. 19, Parade. 20, Ego. 21, Dene. 22, End. 24, Eh. 25, T.C.D. 27, Dab. 29, Dray. 31, Tub. 33, Draw. 34, Bed. 36, But. 38, No. 40, A.E.C. 42, Lean. 45, G.P.O. 47, Morbid. 48, Go. 49. Oidium. 51, Snivel. 53, Nitric. 55, Deist. 56, Hens. 57, Consults. **Down:** 1, Assay. 2, Pean. 3, Oil. 4, Snipe. 5, Tenant. 6, To. 7, Epode. 8, Hip. 9, Ache. 10, Usage. 13, Trend. 15, Erect. 17, Nohow. 21, Drab. 23, Dad. 26, Dub. 28, Bran. 29, Dingo. 30, Yea. 32, Bulbs. 35, Demur. 37, Teinds. 39, Opine. 41, Comic. 43, Adieu. 44, Bolts. 46, Odin. 48, Gest. 50, Its. 52, Vil. 54, C.O.

DECEMBER 1953 BRIDGES CONTEST

1, Runcorn, U.K., B.R. (L.M.R.). 2, Moerdijk, Holland, Netherlands Railways. 3, Britannia Tubular, U.K., B.R. (L.M.R.). 4, Poughkeepsie, U.S.A., New York Central. 5, Quebec, Canada, C.N.R. 6, Tay, U.K., B.R. (Sc.R.). 7, Canyon Diablo, U.S.A., Atchison, Topeka and Santa Fé. 8, Forth, U.K., B.R. (Sc.R.). 9, Kinzua, U.S.A., Erie R.R. 10, Royal Albert, U.K., B.R. (W.R.). 11, Boyne, Eire, former G.N.R. (I.). 12, Fades, France, S.N.C.F. (South-Western Division).



A3 Pacific No. 60099 at Perth station heading the Edinburgh (Waverley) express, and 5MT No. 73009 pulling out on the southbound Saint Mungo. Prize winning entry in the March 1954 Railway Photographic Contest, submitted by R. K. Evans, aged 19, of Hessle.

Fireside Fun

Motor Car Salesman (desperately): "But, madam, if you take this car we will put your initials on it free of charge!"

Mrs. Jones: "But my husband says it's not the initial cost that counts, but the upkeep."

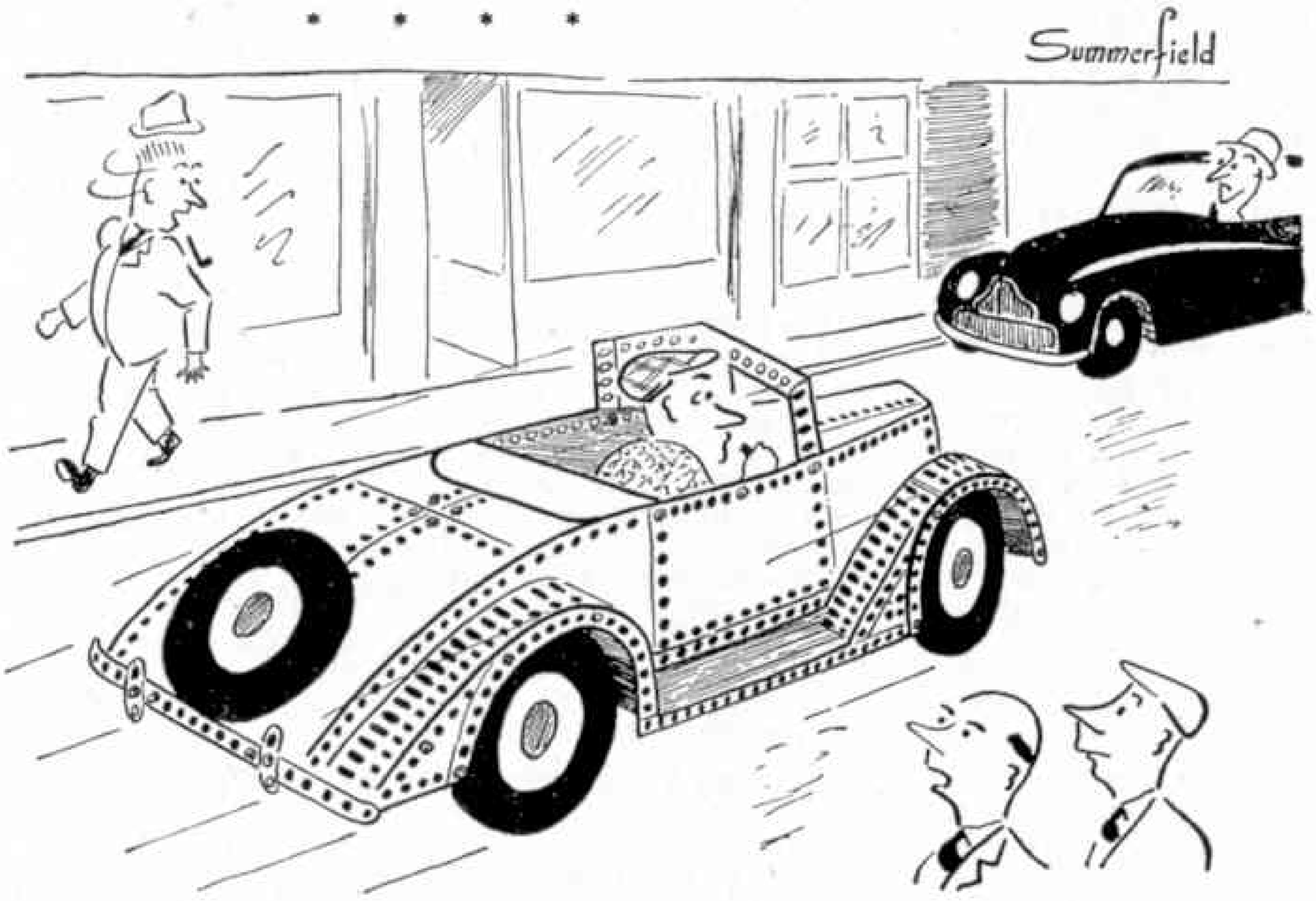
* * * *

"How are you getting on at the University now?"

"Oh, pretty well, thanks. I'm trying awfully hard to get ahead."

"That's good, you certainly do need one."

* * * *



"I just wouldn't believe it if I wasn't seeing it with my own eyes!"

* * * *

A man went to an insurance office to apply for life insurance. The insurance agent inquired: "Do you drive a car?"

"No," replied the applicant.

"Do you fly?"

"No."

"Sorry," said the agent curtly, "but we don't insure pedestrians any more."

("Liverpool Echo")

* * * *

An Italian baker was confronted with the problem of mastering English in order to impress the large number of tourists. After much careful study of several books he felt confident to advertise the generous size of his wares and painted above his shop window the following sign:

"Luigi Ferazzi, The Biggest Loafer in Town."

* * * *

A woman boarded a 'bus and sat down next to a quiet-looking gentleman.

After they had travelled a short distance she took out a map of Manchuria and began to study it.

The man next to her gazed at the map for a while. Then turning to the woman, he said, "Excuse me, lady, but are you sure you're on the right 'bus?"

* * * *

Two farmers were constantly grumbling, each trying to find things worse than the other.

"Never did see hay grow so short as this year," sighed one.

"You think yours is short," snorted the other, "I had to lather mine to mow it!"

Two men, noted for being a little on the simple side, were putting up a picture in their room. Suddenly one noticed that his friend was throwing the nails away by the dozen.

"What's wrong with the nails?" he asked.

"The heads are on the wrong end," was the reply.

"Don't be silly," said the other. "They're made for the other side of the room!"

* * * *

It was almost time for the celebrated guest to make his speech.

The chairman looked around at the company. Then he leaned towards the speaker:

"Do you think you'd better begin your speech now," he whispered, "or shall we let them enjoy themselves a little longer?"

* * * *

BRAIN TEASERS

A LETTER SUM

Here is a simple multiplication sum in which the figures are represented by letters. Can you find which figure each letter represents?

```
          B C F
          H A C
        -------
          G J H
      B C F
  A H H H
-----------
A I A H F H
-----------
```

* * * *

FACT OR FICTION?

Which of these people really lived?

1. Mrs. Beeton
2. Sweeney Todd
3. Tom Thumb
4. Rip van Winkle
5. Beau Brummell
6. Dick Whittington
7. Sexton Blake
8. Dick Turpin

* * * *

CAN YOU DECIPHER THIS MESSAGE?

Police were expecting a crook to disclose his movements in a message to his confederate. On interception the message read as follows:

113120718122519514419120

(Signed) 1212

What was the key and the message?

(Cracroft)

* * * *

SOLUTIONS TO LAST MONTH'S PUZZLES

First into Last

By adding "a" to "1st" you get "last" if the "1" looks like an "l"!

* * * *

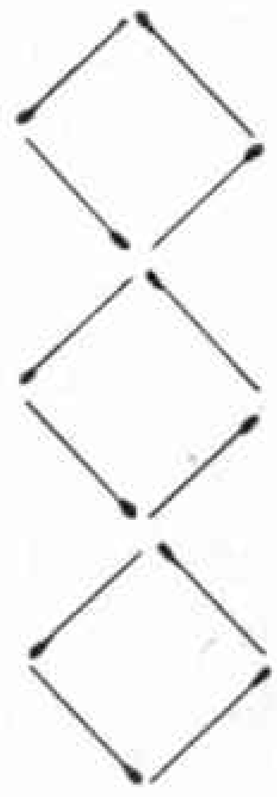
A Novel Word Making Puzzle

The following are the words formed by adding one letter to each end of the 3-letter groups. 1. Brand, 2. Acids, 3. Event, 4. Cream, 5. There, 6. Evade, 7. David, 8. Mason.

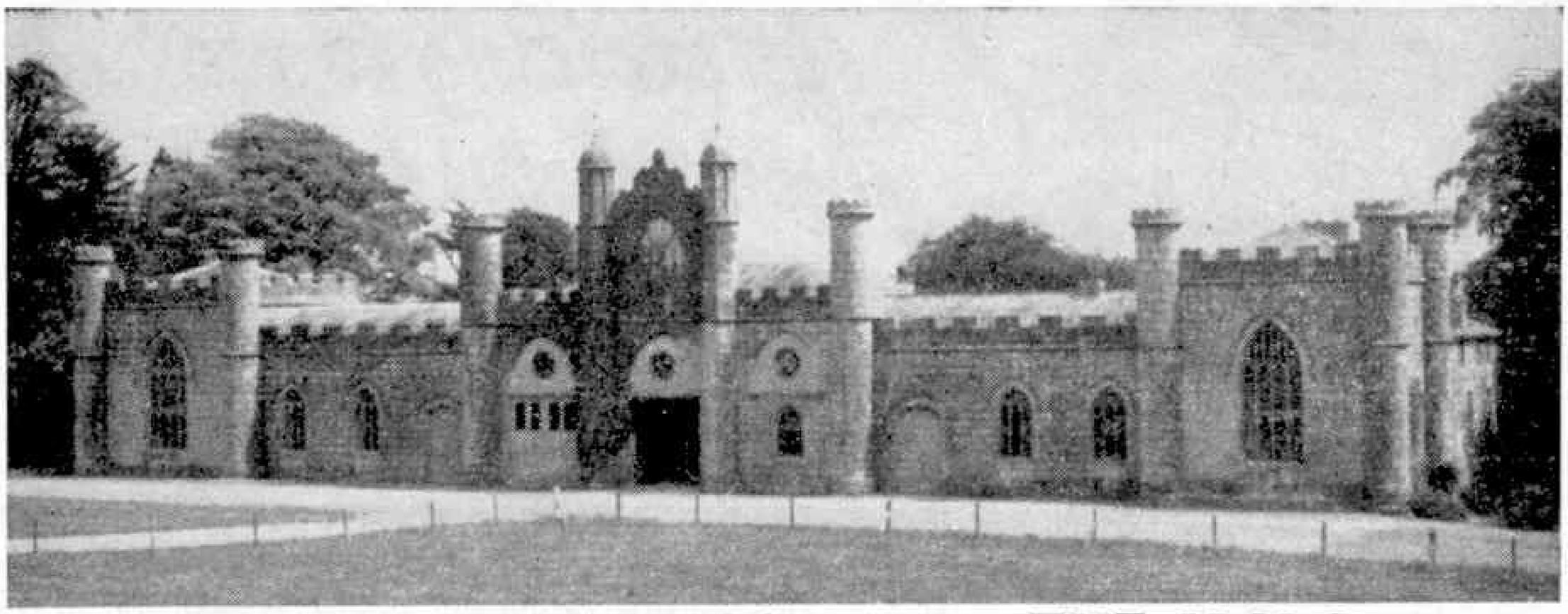
* * * *

A Match Trick

This trick with 12 matches can be solved by lifting four of the matches and re-arranging them to form three equal squares, as shown in the sketch alongside.



TRAINING FOR THE MERCHANT NAVY



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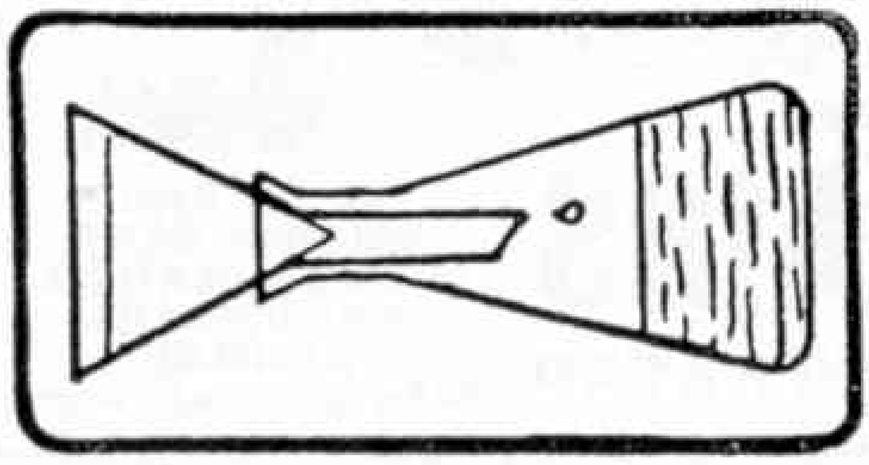

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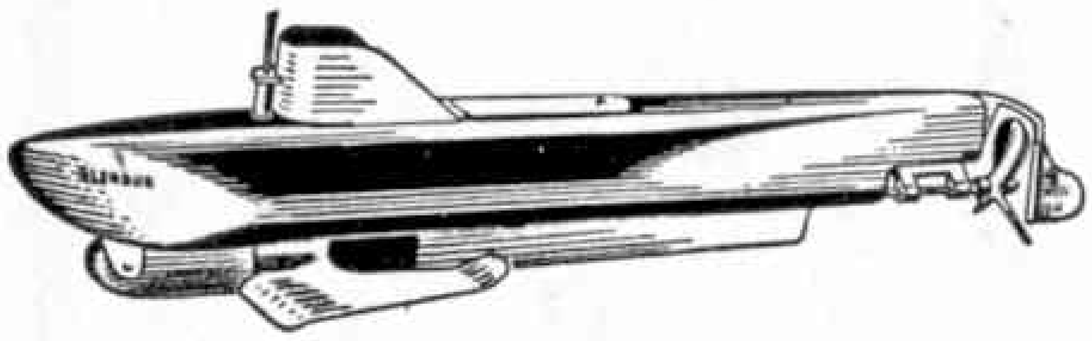

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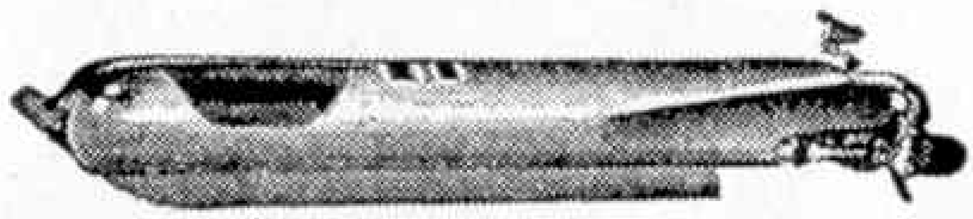

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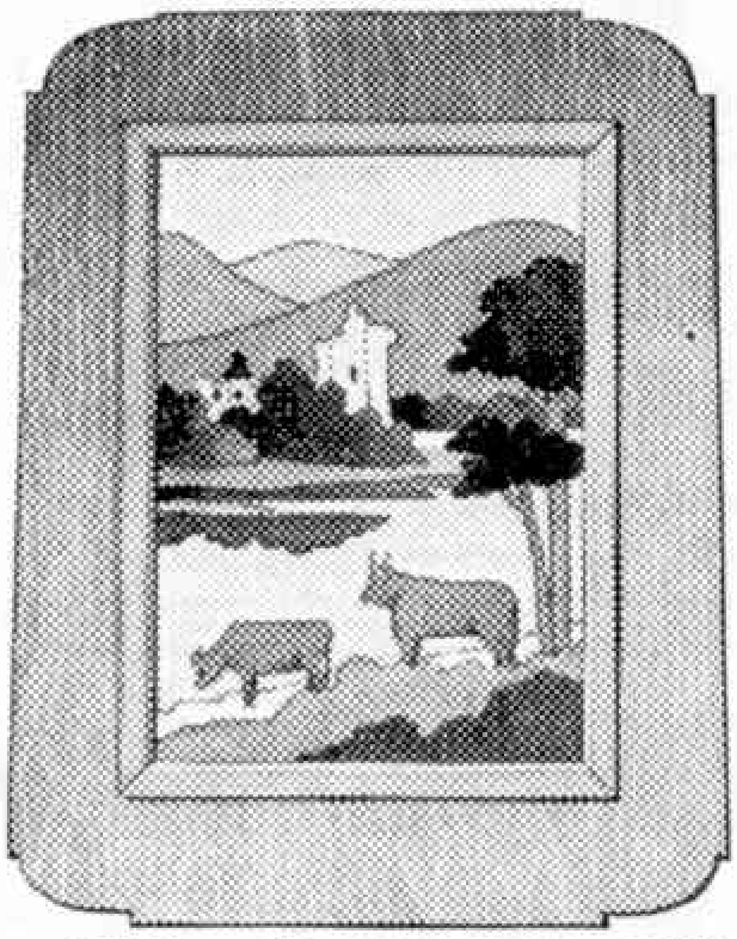

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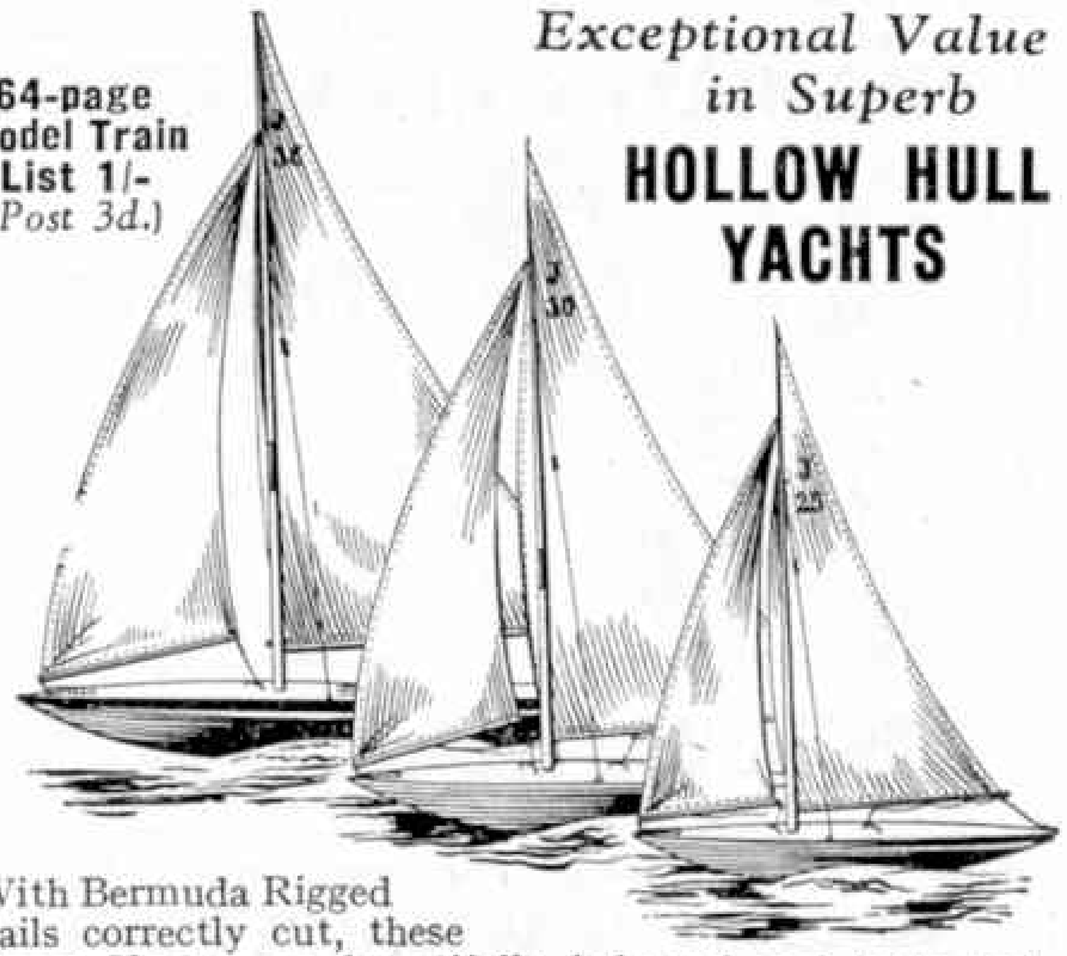

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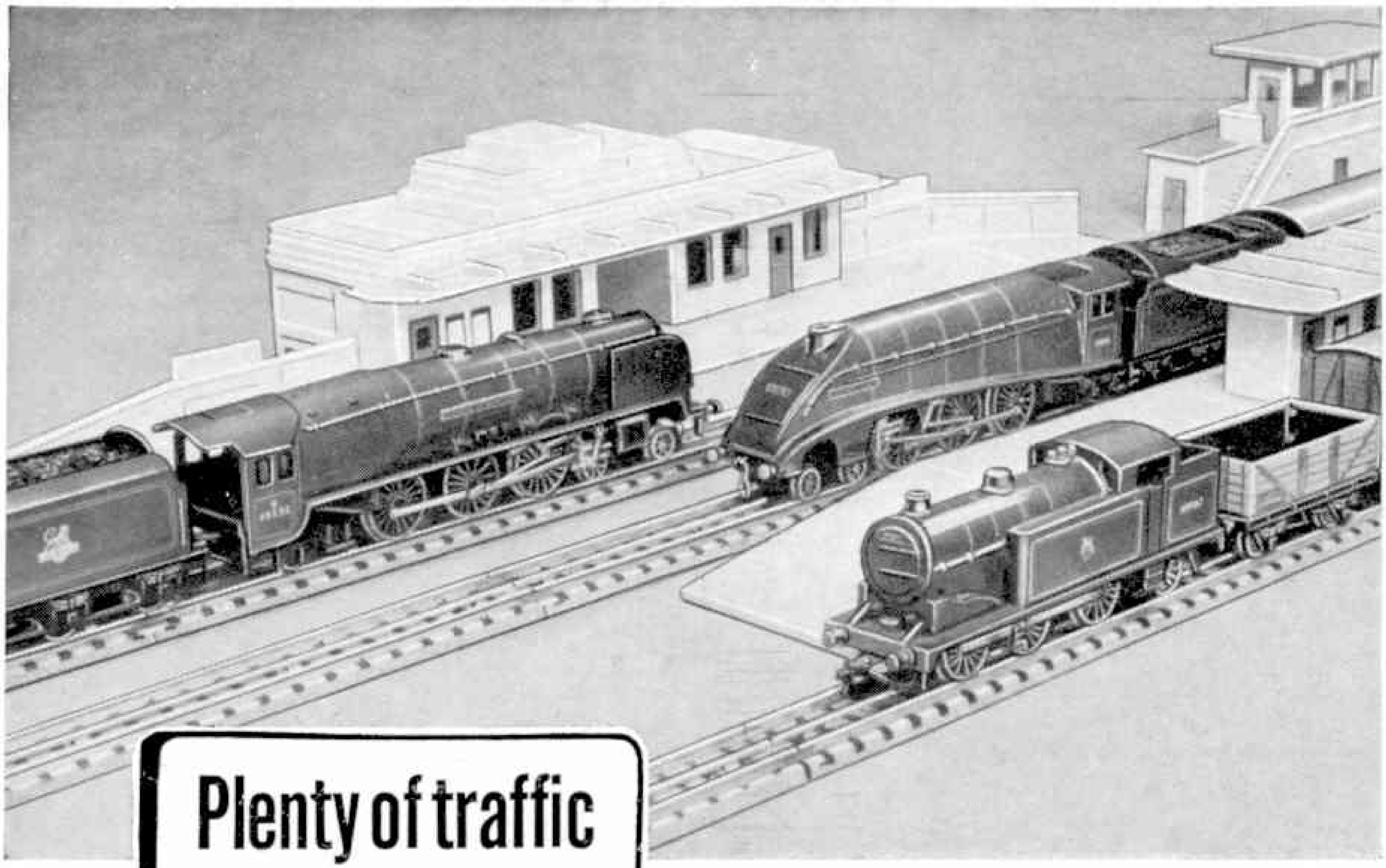

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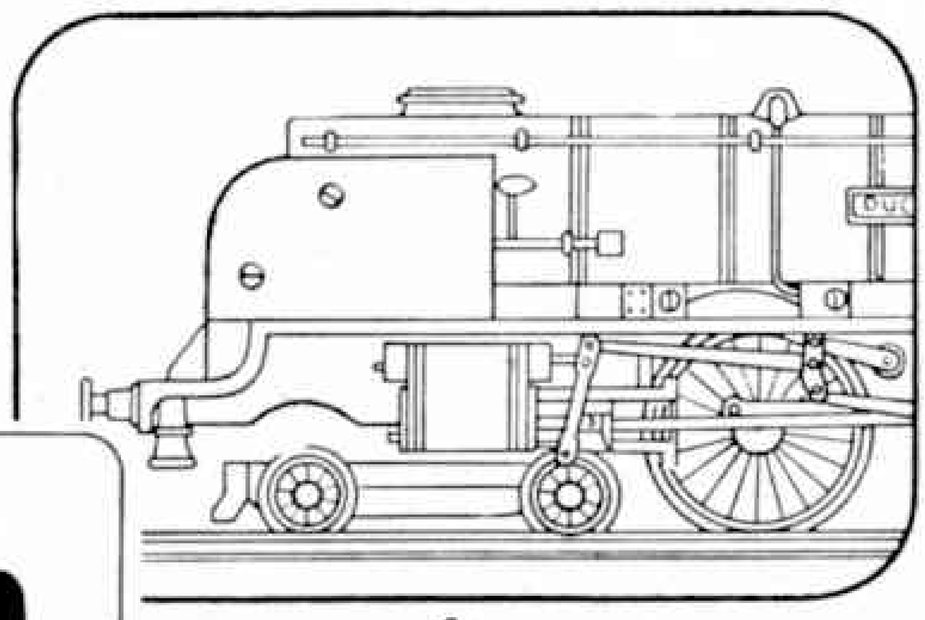

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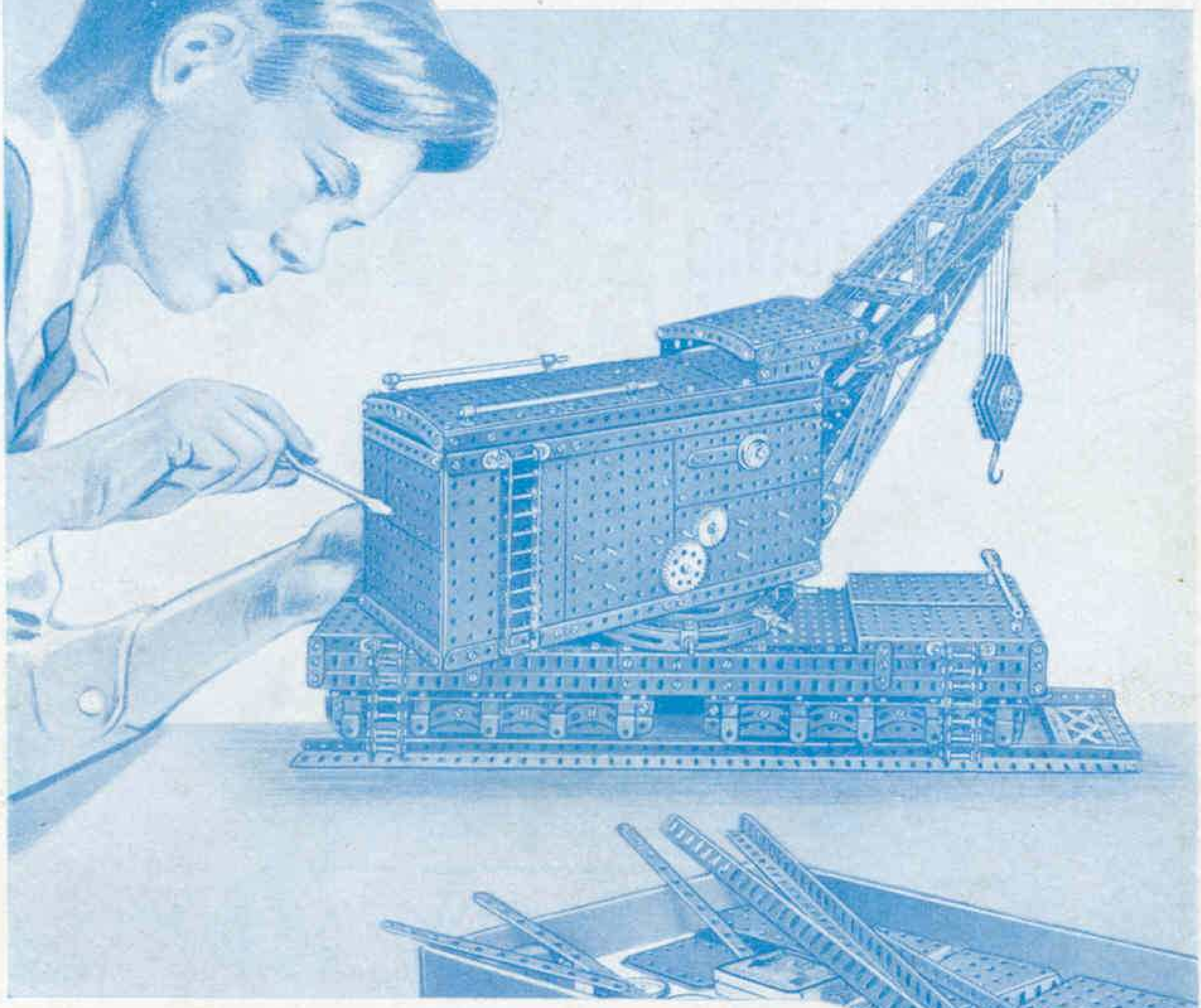

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